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VOL. 86 No. 2211

25 NOVEMBER 1961

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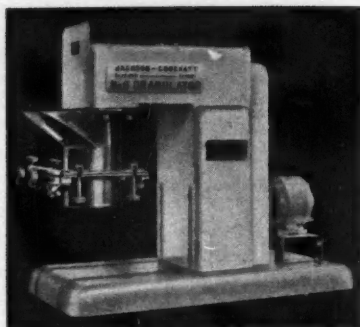
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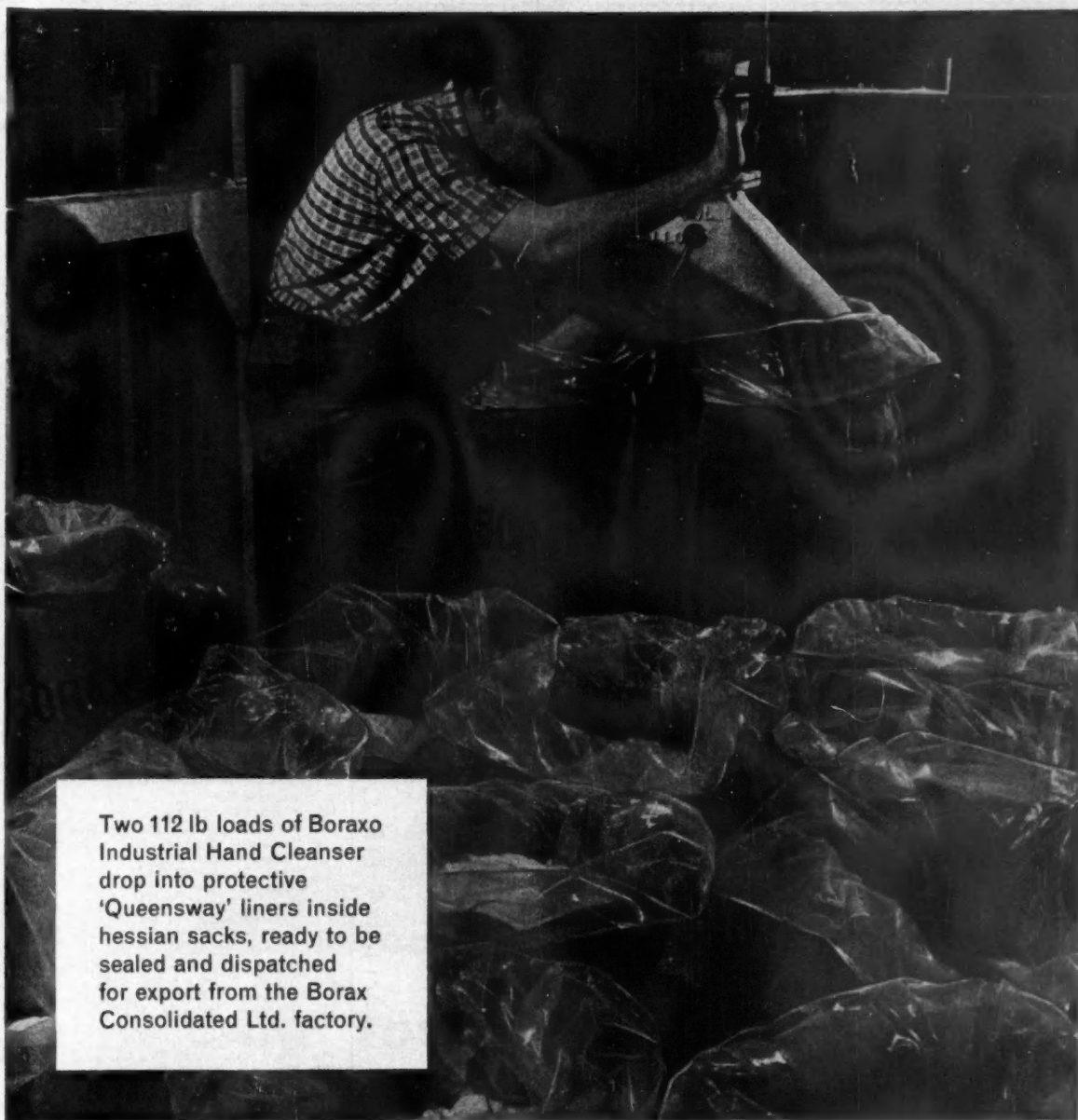
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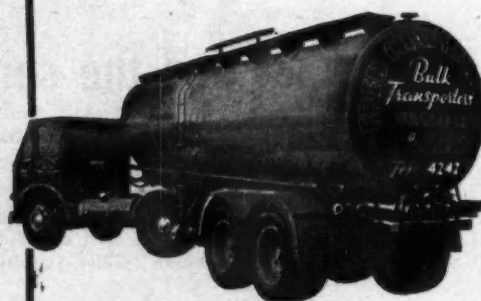
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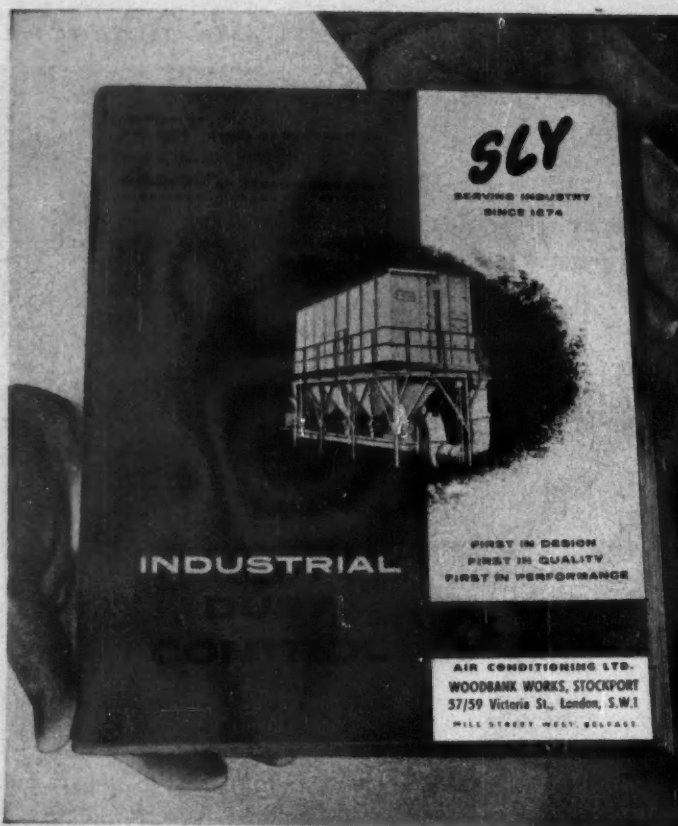
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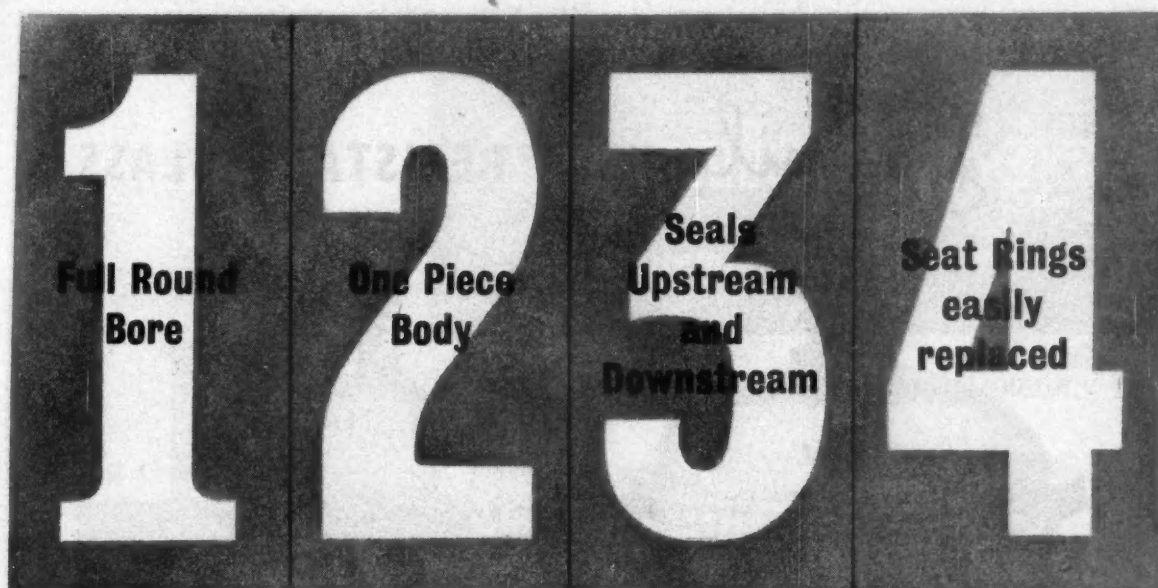
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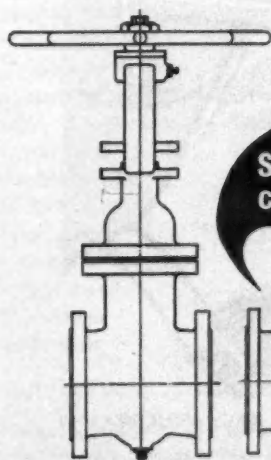




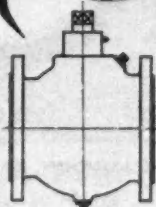
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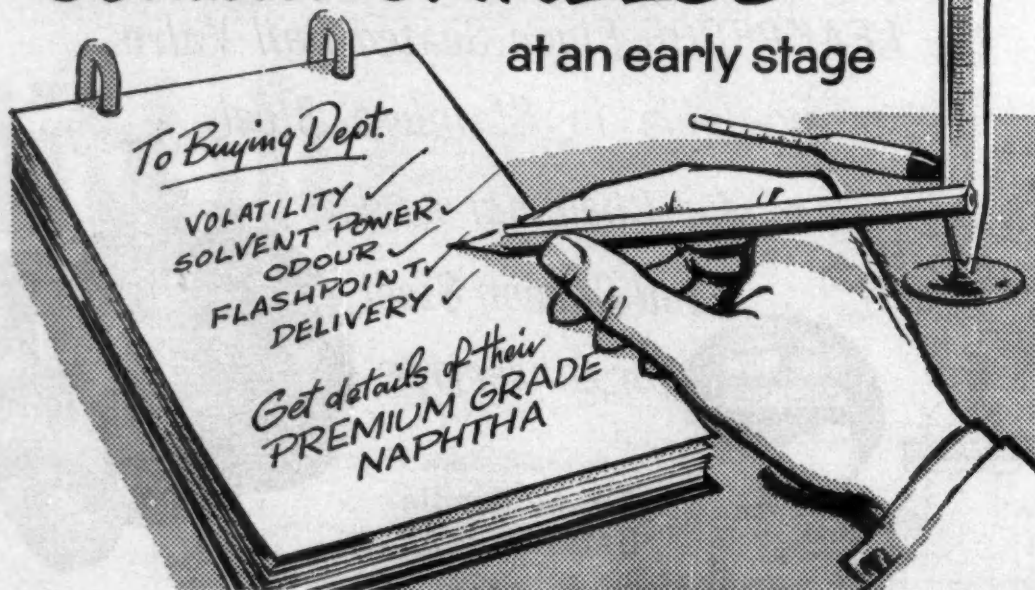


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Editor

M. C. HYDE

Manager

R. C. BENNETT

Director N. B. LIVINGSTONE WALLACE

**Midland Office**Daimler House, Paradise Street,  
Birmingham. [Midland 0784-5]**Leeds Office**Permanent House, The Headrow,  
Leeds 1. [Leeds 22601]**Scottish Office**116 Hope Street, Glasgow C2.  
[Central 3954-5]**IN THIS ISSUE**

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## U.K. OIL INDUSTRY

THE British oil industry has never seen so much activity as in the past few months. The main producers—British Petroleum, Esso, Mobil and Shell—have had the refining market to themselves for a long time, but it is now apparent that at least one new refiner—probably more—will enter the scene in the next few years.

Main attraction of the U.K. market for petroleum has been its high growth rate in comparison with other countries. This has attracted the petrol marketing companies in force. Among the major marketers in the U.K. who have no refineries, Regent Oil Co. have recently stated they are planning to build a refinery with capacity for between 80,000 and 100,000 bbl./day. Regent are 50% owned by Texas Oil Co. and Caltex, in whom Texaco have a 50% interest.

Regent are estimated to hold about 8% of the U.K. petrol market but to have a much larger share of the demand for fuel oils. Among other established marketing companies who have no refineries, Petrofina (Belgium-based), Total (Cie. Francaise des Petroles) and Jet (now owned by American Oil Co.) can also be considered as possible entrants to the U.K. refining industry.

In recent weeks, the Murphy Corporation, a rapidly expanding U.S. independent oil company, have announced their intention of starting retail petrol operations next spring for Murco. Two garages have already been bought and it is planned to have 10 before selling operations are started. It is hoped to set up a terminal in the Thames estuary. Murphy, however, have no plans to build a refinery.

Both Gulf Oil and Ultramar have been reported as possible newcomers to the retailing field, but it likely that they will be beaten by Tidewater, who have already started distribution of their Veedol lube oils.

The biggest threat to the U.K. oil companies, perhaps, comes from E.N.I., whose British subsidiary, A.G.I.P. (Great Britain) Ltd. will enter the field some time next year depending on when they can secure a suitable terminal. E.N.I. aim to start with about 70 petrol stations and have set their sights on obtaining some 25% of the market. E.N.I. are known to be planning a refinery on the west coast. Of the other newcomers, Amoco have 400 filling stations under the Jet symbol and Total about 100.

Currently British refining capacity is around 1.05 million barrels per calendar day, compared with 940,000 a year ago. This total is made up as follows: British Petroleum with more than 300,000 bbl./day crude capacity at the Isle of Grain, Llandarcy and Grangemouth; Esso also with over 300,000 bbl./day at Fawley and Milford Haven; Mobil with over 42,000 b.p.s.d. at Coryton; Shell with around 300,000 bbl./day at Shellhaven, Stanlow and Heysham.

The British refining industry, which has seen a marked expansion of capacity since the end of the war, also has plans for further expansions which are likely to be on-stream before any potential newcomer could get into production.

British Petroleum have a 23,000 bbl./day catalytic reformer under construction at the Isle of Grain which is due on stream early in 1962 and

(Continued on page 850)



## Glaxo's reorganisation will include new research company

**G**ROUP turnover of Glaxo Laboratories Ltd. for the year ended 30 June, 1960 was, excluding the sales of Evans Medical which was acquired during the year, increased by 7%. In spite of the increased turnover, however, trading profit before tax (excluding Evans Medical) was down by 4% and by 8% after tax. During the year, the Group spent £1,800,000 on the improvement and extension of manufacturing facilities, two-thirds of its overseas.

The price of a number of Glaxo's products have been reduced during the year, some reductions being made in accordance with the Voluntary Price Regulation Scheme which was agreed between the industry and the Ministry of Health in 1957 and was renewed with modifications in December, 1960. It is estimated that the price reductions announced by Glaxo during the year will benefit the Ministry of Health by not less than £500,000.

In connection with the Ministry's decision to buy unlicensed drugs for the Health Service, the chairman, Sir Harry Jephcott, said that if the drug manufacturing industry of the U.K. is to maintain its competitive position in the export trade, it must be assured of the basic demands for its products which the requirements of the home market represent, otherwise it will not be able to spread the high overhead costs over a large enough output to ensure a competitive manufacturing cost.

A proposal that the group should be reorganised was put forward at the Annual General Meeting. It is proposed that the company's name should be changed to The Glaxo Group Ltd. and that a new subsidiary company, Glaxo Laboratories Ltd., should be formed to carry out the manufacturing and trading activities that have always been conducted under that name. At the same time, it is proposed that the research and development directed towards future products and new processes of manufacture will be the responsibility of another new subsidiary, Glaxo Research

Ltd. Stock certificates issued by the company under its present name will remain valid and will not need to be changed.

As far as the future is concerned, the chairman said that no dramatic change in circumstances can clearly be predicted. There is the prospect of keener competition and finer profit margins. It will be the group's endeavour to meet these adverse indications with increased turnover. The rate of increased turnover realised during 1960/61 has been maintained during the first three months of the current year.

### A. & W. resin arrangement with Walker

AN arrangement has been made between Albright and Wilson (Mfg.) Ltd. and the Walker Chemical Co. of Bolton for the marketing and development of high temperature resins.

The principal resin, R346, is a solid, partially condensed, and is also available in solution form. Mixed with hexamine or formalin in a suitable solvent and with a suitable filler, it can be used for preparing laminates. R346 can be used at up to 500°C. One obvious field is rocket and aircraft engine mountings; other uses include brake linings, abrasives and electrical engineering.

A and W are to act as selling agents for the resins and Walker will manufacture them. The resins have been developed from a programme of research in which Albright and Wilson collaborated with Walker. Both companies will continue research on these and similar compounds.

### Obituary

**Mr. Edwin Gregory, F.R.I.C., M.I.Chem.E.**, a director of Edgar Allen and Co. Ltd., Sheffield, for 15 years, and chief metallurgist from 1944 until his retirement from executive duties in March 1961, has died aged 67.

## B.o.T. spokesman on possible tariff changes

How will Britain meet the 30% internal tariff cuts made by Common Market countries and a further cut of 20% which might be made by the end of this year? A clue to the Government's intentions was given last week by Sir Richard Powell, permanent secretary to the Board of Trade, when he outlined two possible methods of approach.

The first would be to catch up quickly with the progress made by the Common Market. The second would be to try to negotiate some more gradual arrangements for the transition.

Sir Richard believed it would be wise of industry to do some hard thinking on the basis of an early move towards the position that the C.M. countries had already reached, although it was not yet possible to tell what would happen.

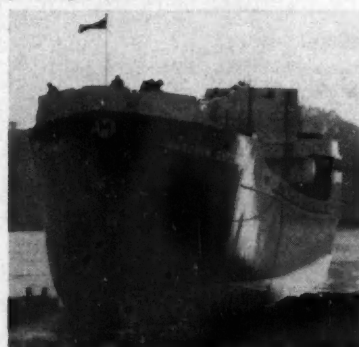
Whatever transitional arrangements might be made, within a few years of Britain's entry to the Common Market, all tariff barriers between member nations would be entirely swept away. This would involve fundamental changes in the structure and pattern of output and trade in all sectors of British industry.

## U.S. price fixing charges on carbon dioxide

AIR Reduction and General Dynamics have both pleaded guilty to charges made by the U.S. Government that they have been fixing prices of carbon dioxide, states *Chemical and Engineering News*, 20 November. Executives of the two companies also pleaded *nolo contendere* to charges that they violated a 1952 Antitrust judgment by conspiring to fix carbon dioxide prices as long ago as 1953.

It was felt that since carbon dioxide accounted for such a small part of their business (8% for Air Reduction and less than 2% for General Dynamics) that it was best to avoid what might prove a long and expensive case. Olin Mathieson and Chemetron pleaded not guilty to the same charges.

## Marchon's second phosphate carrier launched



Launching of the m.v. 'Marchon Enterprise' at Clelands Shipbuilding Co. Ltd., Wallsend. This is the second phosphate carrier to be built for Marchon Products Ltd. and it was launched by Mrs. Secher, wife of the company's vice-chairman

## Crude tar and benzole production, April-June

Quantity of crude tar produced by the U.K. gas industry during the three months ended June 1961, was 397,000 tons, compared with 399,000 tons during the same period of 1960. Crude benzole produced amounted to 5.8 (5.9) million gall. The quantity of coal carbonised was also fractionally lower.

## U.K. oil industry

(continued from page 849)

are now well into the design stage of their planned refinery at Belfast which will have capacity for 26,000 bbl./day. Mobil will complete expansion of their crude capacity by 15,000 b.p.s.d. early next year, while Shell will complete a 6,700 bbl./day platformer at Stanlow by 1963. I.C.I. will enter the 'refining' field when their new 20,000 bbl./day distillation unit becomes operative on Tees-side. However, this production is for captive use and will provide feedstock for the Wilton olefin plants.

## Project News

# First U.K. Ferrofiner to be built for B.P. by Whessoe

**M**AIN contractors for the Ferrofiner unit—the first of its kind in the U.K.—which will handle lube-oil production at the Llandarcy refinery of **British Petroleum Co. Ltd.**, are **Whessoe Ltd.**, Darlington. The Ferrofining process was developed by B.P. Group scientists in France and England. It enables lube oils to be manufactured without producing a solid waste by-product that requires disposal.

With a throughput capacity of 3,500 bbl/day, it will carry out the final process in which lube oils are clarified and stabilised before blending. The new unit will replace an existing clay plant which used large quantities of special earth to carry out this treatment.

Construction is planned to start early in 1962 and the Ferrofiner should be commissioned by about the end of the year.

## Keebush equipment for Courtaulds project

● **EQUIPMENT** in Keebush plastics material has been supplied by **Kestner Evaporator and Engineering Co. Ltd.**, London, to Courtaulds Ltd. for integration by the latter into plant that forms part of one of Courtaulds' contracts with the U.S.S.R.

## Heavy media separation plant for fluorspar processing

● **MANUFACTURE** of a heavy media separation plant, costing £20,000, is to be carried out by **G.E.C. (Engineering) Ltd.** This plant will be installed at a small mine at Blanchland, Co. Durham, for upgrading fluorspar. The mine is operated by **Blanchland Fluor Mines Ltd.**, a wholly-owned subsidiary of Colvilles Ltd., and supplies metallurgical grade fluorspar to the Ravenscraig steel-works where it is used as a flux in the blast furnace.

Jigs and concentrating tables are used in the existing plant for upgrading the fluorspar, but the jigs are to be replaced by the G.E.C. heavy media separation plant. This is the company's standard H.M.S. system with slight modifications to suit the particular conditions, and it will be able to handle a feed of 12 tons/hr. from the existing crushing plant.

A conical separator vessel of 5 ft. diameter is to be incorporated in the plant and it will be fitted with a tubular steel agitator frame having non-return air valves which are used for re-activating the ferro-silicon medium. The slurry pumps, medium recovery system, and Eliplex screens for feed preparation, sink and float drainage, and dewatering

are all included in the G.E.C. contract. In addition to this equipment, G.E.C. is also supplying a 3 ft. dia. rotary table feeder, a 20-ton capacity storage bin, a 12 in. wet cyclone and a slurry pump for a froth flotation plant.

It is intended to use the froth flotation equipment to produce an acid grade fluorspar from the -25 mesh fines which will be removed by the feed screen ahead of the H.M.S. cone, and from the - $\frac{1}{16}$  in. float fraction of the H.M.S. plant.

## Kellogg to engineer new Caltex ethylene complex

● A NEW ethylene complex for **Caltex Oil (Germany) GmbH**, a member of the Caltex Group, is to be engineered by **M. W. Kellogg**, New York, a subsidiary of Pullman Inc. and **Kellogg International Corporation** in London. Other Kellogg European affiliates will act as consultants and advisers to Caltex in materials procurement and construction.

The complex will consist of a 70,000 tonnes/year ethylene plant, a 13 million s.c.f.-per-day hydrogen plant and a pyrolysis naphtha hydrotreating plant. Completion is scheduled for autumn 1963.

The complex will be an integral part of the new Caltex 40,000 bbl/day refinery on which Kellogg companies are furnishing the same all-inclusive services as in the case of the ethylene complex. The site of these facilities is located on the south bank of the Main river, 30 km. west of Frankfurt.

A central utility core will serve both the ethylene complex and the refinery, and will include a common barge harbour and rail loading facilities. (See also 'Distillates', page 852).

## British mixers for new Swedish coating plant

● **FLUID** mixing equipment, valued at £8,000, is being supplied by **Lightnin Mixers Ltd.**, Poynton, Cheshire, for a new paper-coating plant in Sweden. The order is for eight individual mixers, together with ancillary equipment, of varying sizes up to 20 h.p., and all to be finished in stainless steel. The mixers are due to be delivered by the end of 1961.

## H.W. heat exchangers for Winfrith atomic reactor

● **AIR** cooled heat exchangers for cooling the O.E.C.D. Dragon reactor at Winfrith Heath are to be supplied by **Head Wrightson Processes Ltd.**—a subsidiary of Head Wrightson and Co. Ltd.—under a contract worth about £35,000. The con-

tract was gained against European and U.K. competition. The type of cooler to be supplied is divided into three sections for tertiary, ventilation and ancillaries cooling.

The five-year Dragon high-temperature gas-cooled reactor project was initiated in 1959 and is being carried out under the auspices of the O.E.C.D. (formerly O.E.E.C.) European Nuclear Energy Agency with the co-operation of the U.K.A.E.A. Contracts already negotiated in connection with the project exceed £4 million in value.

## McAlpine to build roads, foundations for Bitmac refinery

● **FOUNDATIONS**, sewers and roads for the new benzole refinery being built at Llanwern, near Newport, Mon., for Bitmac Ltd. are to be provided by **Sir Robert McAlpine and Sons**, under a contract awarded them by the A.P.V. Co. Ltd., Chemical Engineering Division, who are the main contractors for the project.

Although the completion programme is tight, construction of the £300,000 plant is ahead of schedule. Commissioning is scheduled for April 1962.

## British cobalt-60 source for Max-Planck

● **THE** Radiation Chemistry Department of the Max-Planck-Institut für Kohlenforschung, Mülheim-on-Ruhr, West Germany, has received from the Langley, U.K., firm **Nuclear Engineering Corporation Ltd.** a cobalt-60 radiation source for radiation-chemical experiments. The unit, with an activity of 5,000 curies, is understood to have cost some DM38,300 (about £3,480) and will form part of a radiation plant with a total worth of some DM217,000 (about £19,700) and paid for by the Federal Government.

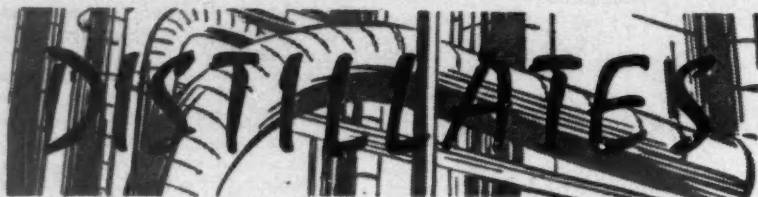
## Cohen's acquire Avonmouth mineral treatment plant

A COMPLETE modern mineral treatment plant, installed at the Avonmouth works of the National Smelting Co. Ltd., has been acquired for resale by **George Cohen Sons and Co. Ltd.**, one of the 600 Group.

The plant comprises a materials handling system followed by jaw, Kennedy, gyratory and rolls crushing equipment of large capacity, with materials storage and feeding plant to four rotary kilns by Ernest Newell. Two of these are 160 ft. long by 11 ft. 3 in. dia. and the remaining two are 135 ft. by 8 ft. 2 in. and 80 ft. by 6 in. respectively. They are designed for pulverised coal firing. The residues from the principal kilns pass through conveyors to storage bunkers.

Metallic fume from the kilns is collected in a very large automatically shaken bag plant by Power Gas, comprising five separate units, each capable of handling 25,000 c.f.m. together with the entire dust collecting and removing equipment. The handling plant comprising belt conveyors, screw conveyors, elevators, etc., was supplied by **Spencers, Melksham Ltd.**





★ A SURVEY conducted by the British Aerosol Manufacturers' Association within its membership indicates that 44 million non-food metal containers were filled by members on their own premises during 1960. This confirms the original estimate of the association in March when the figure was given as "at least 40 million". In addition, glass aerosols with plastics protective coatings became available from U.K. sources during the period.

The British Aerosol Manufacturers' Association was formed in January of this year and its membership is steadily rising. At present it stands at around 22 or 23.

★ URGENT requests for drugs are often a matter of life and death—especially when they come from the remotest parts of Australia. So, when the Sydney branch of Parke, Davis and Co. received an urgent request for some chlormycetin from the country town of Inverell, 400 miles away, Mr. V. C. Norris, the company's Australian sales manager, took immediate action. He rushed the drug by car to Sydney Airport where, at his request, a regular airliner was standing by. On the plane's arrival at Inverell airfield, a fast car was waiting to deliver the drug to a local chemist's.

There it was collected by the customer, who was most impressed, if a little surprised, at the speed with which the drug had been delivered and at the anxious enquiries about the patient. Only then did it emerge that the customer was a veterinary surgeon and the patient—a bull.

★ KELLOGG International Corporation opened their new London H.Q. with the news, given by Mr. E. F. Liebrecht, president of K.I.C. that the company is to engineer a new ethylene complex for Caltex near Frankfurt. The company has already been awarded the contract for building the Caltex refinery in the same area and ground will be broken within the next few months.

Mr. Liebrecht told me that second part of the B.P. two-stage refinery was now being commissioned at Dinslaken a year after the 100,000 bbl./day refinery was put into operation. The new Turkish refinery in which Caltex hold a major interest, has just come on stream, while in Pakistan progress is being made in the construction of another refinery for an oil consortium and Pakistani interests. Site preparation is well in hand in Denmark for Gulf Oil's first European refinery. Other Kellogg contracts in hand include the

1 million tons/year crude distillation unit for I.C.I. and a fertiliser complex under construction in Portugal for Uniao Fabril.

I was intrigued to see, before the building was officially opened by the Mayor of Marylebone, that the various aspects of a turnkey contract—estimating, design, procurement, construction and operating—were illustrated diagrammatically in each department. Theme taken was the 2,500 bbl./day vacuum distillation unit that K.I.C. are handling for Lobitos. This is nearing completion. Opening day visitors were shown a model of this plant as well as a piping model of the Gulf Oil refinery in Denmark.

★ THE days when a woman will be able to go into a shop and buy home-produced nylon-6 are still only on the horizon but she can now get a preview of things to come. This week Snia Viscosa announced the introduction to the U.K. of their Lilion nylon-6 yarn.

My colleague had the opportunity, not often accorded to technical journalists, of examining the finished product (as opposed to the unprocessed polymer) in the form of beautiful Italian-designed clothes. The fashion show certainly demonstrated the versatility of this fibre whether used on its own or in combination with a number of natural fibres or other synthetics.

My colleague was able to confirm that the claim of a softer 'feel' for nylon-6 as opposed to nylon-66 is justified, but whether or not the other property claimed for nylon-6—that it doesn't build-up so much static electricity—is also true can only be decided with time. I am told that nylon-66 is better than polyester fibre in this respect but that it would be nice to have a white nylon that didn't take on a permanent grey hue after only a few wearings.

★ My German correspondent tells me that the West German Chemical Industry Association (Verband der Chemischen Industrie) has drawn the Federal Government's attention to the price level of U.S. polythene currently being offered in Germany. Price cuts in the past four years have halved the price of German-produced polymer and it is now more than 10% below the U.S. domestic price.

Although it is claimed that U.S. exporters have offered polythene at a price about 40% below that on the American home market, German producers are not at this stage making a direct demand for the introduction of anti-dumping

measures. The step is aimed at making the Government consider the question in the light of the newly introduced French anti-dumping duty and I.C.I.'s application for such a duty in the U.K. (see CHEMICAL AGE, 11 November, p. 754).

Prices of benzene, styrene and phenol imported from the U.S. in large quantities are causing concern, although not to the same extent as polythene. Phenol, at least, is suspected as being imported at a price that amounts to dumping.

★ ALSO causing concern in the Common Market is the prospect of low-priced imports of synthetic rubber from the U.S. and East Europe. At the opening of the new SBR plant at Berre of Soc. des Elastomeres de Synthese—reported in 'Overseas News' last week—it was stated that under the Treaty of Rome synthetic rubber is 'G-listed' without tariff protection, as opposed to the somewhat high duties imposed by the U.S. and this country.

This presupposes that synthetic rubber producers will follow the price-cutting lead given by plastics producers, whereas in the past they have been noted for their stable price policy. Imports from East Germany and Poland, where big capacities are building up, are also expected.

The French company (owned by Shell, Texas Butadiene and French tyre makers) plans to have a polybutadiene unit on stream in 1963. It is in the diene rubbers that trade circles expect price cutting and it is interesting to note that from 15 November Shell Chemical, whose polyisoprene plant is at Torrance, Cal., have cut their price 2 cents/lb. to 23 cents.

★ CHEMICAL producers or plant manufacturers interested in having their products made in Brazil, either under a royalty agreement, in partnership with a local concern or by setting up their own subsidiary, may be interested in the specialised services of a new consultancy organisation. Known as Brazilian Trade Consultants and associated with Administradores Profissionais Associados, this firm tells me that all negotiations are conducted on behalf of the principal and that suitable licensees or partners are recommended.

Once an agreement is signed, the organisation supervises and 'polices' the operation to ensure that the principal's interests are fully protected and that maximum revenue is obtained. Assistance can also be given to companies producing capital equipment who are not ready to consider manufacture in Brazil, but who would like to take part in local tenders for imported equipment.

The principal of Brazilian Trade Consultants, Mr. Gordon B. Colman is now in the U.K. to discuss these services with interested companies. His temporary address is 17 Farm Avenue, North Harrow, Middlesex (Field End 9951).

*Alembic*



### Solutions de-grease, de-rust, de-scale simultaneously

Two chemical solutions recently developed by Grant and West Ltd., Stoke Mill, Guildford, Surrey, are claimed to make possible the simultaneous de-greasing, de-rusting and de-scaling of ferrous metals in one tank.

The two new solutions are ChemiClene No. 437, for the removal of oil, grease, light rust and welding scale, and ChemiClene No. 447 for removing oil, grease, heavy rust, welding scale and millscale.

Both solutions work on the same lines. Diluted with water and heated to 40-50°C they emulsify the oil and grease so that they are completely removed in the following water rinse. At the same time rust and scale oxides are removed by chemical action. The time taken varies according to the amount of contamination but Grant and West say that with No. 437 solution the average time should be between 3 and 8 min., while with No. 447 oil, grease and light heatscale is removed in 10-15 min.

The low operating temperature of these solutions has the added advantage of eliminating vapour problems and making extraction plant unnecessary.

ChemiClene No. 437 is, additionally, non-corrosive, and is therefore stated to be particularly suitable for the treatment of partially fabricated work where some of the liquid could be trapped between seams, spot welds and so on.

### New columbium alloys for space age use

A NEW family of space age alloys has been developed after six years of research by Westinghouse Electric. The new materials are alloys of columbium and are said to give high strength at high temperatures without drastic loss in workability or in the low-temperature ductility inherent in the pure metal itself. Although density is about equal to stainless steel, these alloys can operate in the range of 1,800° to 3,000°.

Three alloys are being put into pilot plant production at Blairsville, Pa., and the first will be a columbium-vanadium alloy called B-33. With unusual resistance to corrosion by liquid metals, B-33 is being considered for use in the heat exchangers of space craft.

The two additional alloys to be pilot produced are B-66 (a columbium, vanadium, molybdenum, zirconium alloy) and B-77 (a columbium, tungsten, vanadium, zirconium alloy). The three materials can be forged, rolled, sheared and handled directly often at room temperature.

### U.K.A.E.A. unclassified reports

Selected abstracts of atomic energy project unclassified report literature in the field of radiation chemistry and the fifth annual supplement of the bibliography of published literature (papers noted up to December 1960) are available from H.M.S.O. at 74s.

## CHEMICAL AGE DIRECTORY

### Bigger edition has new feature on consultants, lab. buyer's guide

**W**ITH new features and more pages than ever, the 1962 edition of the "Chemical Age Directory and Who's Who" has now been published. Containing 38 more pages than the 1961 edition, it is the only publication of its kind in the British chemical industry to give detailed information on sources of supply, potential new sales outlets, as well as guides to chemical consultants, the structure of the chemical industry, research establishments, chemistry departments of universities, trade associations and learned societies, and a Who's Who of the chemical industry, chemistry and chemical engineering.

Highlights of the 1962 edition are:

- ▶ A new feature listing independent consultants, with an index.
- ▶ An index introduced to the Who Owns Whom feature.
- ▶ Several hundred more Who's Who entries than last year.
- ▶ Buyer's Guide for the first time in three sections—Chemicals, Chemical Plant, and Laboratory Equipment.
- ▶ Expanded Master Index listing the names and addresses of more than 1,500 companies.

Major addition to the 1962 Directory is a seven-page listing of independent consulting chemists and chemical engineers.

Entries are listed alphabetically under the name of each practice and include the names and qualifications of partners, the interests catered for, and indication of research and laboratory facilities and a note as to whether the principals are members of either the Association of Consulting Chemists or the Association of Consulting Engineers. A classified subject index is also provided.

Who Owns Whom, a feature analysing the structure of the chemical industry, has been completely revised to take account of take-over bids made during the year and for the first time includes a numbered alphabetical index for easy reference. All parent companies are numbered consecutively in the main feature and each company in the index carries the same number as the parent company.

Who's Who, which lists the names, qualifications, positions held, plus offices in learned and other societies, of personalities in the chemical and allied industries and in chemistry and chemical engineering, has been greatly expanded with the addition of several hundred names, bringing the total to more than 5,000.

Other editorial features of this new edition have all been revised and include the names, addresses, and telephone numbers of chemical and allied trade associations, professional bodies, learned societies, Government departments concerned with the chemical industry, the Department of Scientific and Industrial Research, D.S.I.R. Research Stations, research associations, chemistry and chemical engineering departments of British universities, higher colleges of

technology and technical colleges.

Also greatly expanded and changed in format are the Buyer's Guide sections; these have now been divided into three: Chemicals; Chemical Plant and Equipment; Laboratory Supplies. The individual sections have been expanded and there are now more than 4,000 individual subject headings. Each one lists the names of various suppliers—whose full addresses are given in a Master Index. Together these three lists form a comprehensive guide to the products of the chemical industry, the plant and equipment, producers and laboratory apparatus and scientific instrument makers.

The sections covering trade names and trade marks has also been enlarged. With the Buyer's Guide and the Master Index, this section of the Directory is an invaluable guide to sources of supply and to potential sales outlets.

Copies of the CHEMICAL AGE DIRECTORY AND WHO'S WHO, 1962, can be obtained, price 45s, postage 3s 6d, from the Manager, CHEMICAL AGE, 154 Fleet Street, London E.C.4. Preferential rate to CHEMICAL AGE subscribers is 25s (postage 3s 6d).

### I.C.I. surface-coating course for East Europeans

SEVERAL I.C.I. divisions are large producers of surface-coating chemicals and recently a special course in paint technology was arranged by the company for invited scientists from Poland, Czechoslovakia and the U.S. Rumania.

The company already sells substantial quantities of its products to East Europe and it is thought that the surface coating industries of the Soviet-bloc could become important customers for chemicals used in the formulation of modern paints.

# Rapid progress in polyurethane for moulded articles, foams

## Joint R.I.C.—S.C.I. symposium in Manchester

A JOINT symposium held recently by the Manchester and District Section, Royal Institute of Chemistry, and the Manchester Section and Plastics and Polymer Group, Society of Chemical Industry, on 'Polyurethane foams', had a 'full-house' attendance. Lord Fleck, K.B.E., F.R.S., President, S.C.I., opened the symposium.

Speakers were: G. K. Dono and G. G. Skelton (Union Carbide), whose subject was 'The technology and applications of flexible one-shot polyether urethane foam'; Dr. E. Weinbrenner (Bayer) on 'The development of production methods of polyurethane foam in Germany'; and D. J. Doherty, R. Hurd and G. R. Lester (I.C.I. Dyestuffs Division) on 'The properties of rigid polyurethane foams'.

Mr. Dono, tracing the historical development of the polyurethanes, observed that by 1950 flexible polyester foams became available and commercial production followed, but interest remained small. Polyester foam was ineffective against the commonly accepted properties of foam rubber. The rapid growth of the petrochemicals industry led to the investigation of polypropylene glycols as the building block for polyurethane foam in 1957. Flexible polyurethane foams were successfully produced on a commercial scale using at that time the pre-polymer process. The one-shot process was announced in 1958.

Established markets today were wide and varied, and new applications based on desirable foam properties were constantly being explored. Today most foam was manufactured by slab-stock, although more and more emphasis was being placed on moulded articles where major inroads were being made.

### Growing interest in close moulded foams

Interest in close moulded foams had been considerable on the Continent, in England and in the U.S., said Mr. Dono, mainly to complement slab stock as well as in the hope that they could produce foam more economically and with no waste. It had prompted chemical intermediate and foam producers to investigate techniques which gave good mould release and consistent and desirable foam properties with overall reproducibility.

Recent work in their laboratories, observed Mr. Dono, had led to the development of a new intermediate and work on formulations and processing conditions which would aid in lowering the number of rejects, reduce the cure time and cure temperature, permit the stripping of the mould and allow handling of the moulded items without permanent finger-marking.

Another recent introduction of Union

Carbide had been a polyether which was suitable where foam could be flame bonded, heat welded and also heat sealed to p.v.c. Examples shown were characterised by fine open cell structure, excellent handle and drape, resistance to dry cleaning solvent and laundering soaps.

As a result of the wide acceptance of flexible one-shot polyether foams today, they were rapidly replacing other cellular and uncured materials in the market with at least equal but more often, improved technical effect and at a lower cost.

Entirely new end uses were also being established and as a result of continued research and development, it was Mr. Dono's view that the use of polyether foam would have increased threefold five years hence.

Dr. Weinbrenner, in his paper, said there was no doubt that polyurethane chemistry started a new line in the plastics field. There was one very important point to bear in mind about

this development. These materials were produced in the chemical plant and the customer who was working in this type of material had no need to develop any process on the chemical side in order to finish the product. But in the polyurethane field, it was the first time that one of the phases of the chemical process was given into the hands of the customer for particular end uses.

The result, therefore, was that the customer had to learn to think in terms of chemicals.

Mr. Doherty in his address spoke of specific items of equipment which they were using for production purposes.

## I.S.F. congress on world oils and fats trends

NEXT congress of the International Society for Fat Research, the 6th I.S.F. Congress, organised by the Society of Chemical Industry, Oils and Fats Group, will be held in London from 9 to 13 April, 1962. The congress will be opened by the Lord Fleck, S.C.I. president, at the plenary meeting on 10 April.

A programme of some 60 scientific papers has been arranged, copies of which may be obtained in advance by intending participants.

The preliminary programme will be available in the near future and copies may be obtained from the congress secretariat, 14 Belgrave Square, London S.W.1.

## Third-quarter sulphuric acid consumption shows 6% decrease on 1960

### U.K. CONSUMPTION

PRODUCTION of sulphuric acid in the third quarter of 1961 was 633,246 tons compared with 669,848 tons in the corresponding period of 1960, according to the quarterly summary issued by the National Sulphuric Acid Association Ltd. During the quarter, 79.4% of the total capacity represented (797,220 tons) was in use.

Consumption also showed a decrease—633,544 tons compared with 673,139 tons in 1960. The raw material used for the highest proportion of the acid produced (40%) was imported sulphur. Pyrites (18.2%) was the next largest raw material source.

Figures issued by the National Sulphuric Acid Association Ltd. do not include production, raw materials used or trade uses of acids in Government plants.

### SULPHURIC ACID AND OLEUM

Tons	100% H <sub>2</sub> SO <sub>4</sub> (new acid)		
	Contact	Chamber & Tower	Total
Stock 1.7.61	76,634	21,941	98,575
Production	538,497	94,749	633,246
	615,131	116,690	731,821
Stock 30.9.61	86,955	20,050	107,005
	528,176	96,640	624,816
Apparent use			
Total capacity represented (tons/quarter)	659,870	137,350	797,220
Capacity in use (%)	81.6	69.0	79.4

	Tons 100% Acid-Oct 1 July-30 September	
	1961	1960
	Tons 100% H <sub>2</sub> SO <sub>4</sub>	
Acids—organics & misc.	8,913	9,201
Accumulators	2,960	3,101
Agricultural	9,836	11,737
Bromine	6,443	5,582
Clays (Fuller's earth, etc.)	3,362	3,199
Copper pickling	676	577
Dealers	3,106	3,314
Dichromate & chromic acid	5,139	5,541
Drugs & fine chemicals	4,962	4,922
Dyestuffs & intermediates	19,790	24,179
Explosives	2,417	2,311
Export	3,857	3,476
Glue, gelatine & size	113	190
Hydrochloric acid	11,894	12,978
Hydrofluoric acid	8,181	3,813
Iron pickling (inc. tin plate)	27,602	31,278
Leather	1,082	920
Lithopone	3,644	2,916
Metal extraction	537	572
Oil refining & petroleum products	16,630	19,789
Oils (vegetable)	2,190	2,401
Paper, etc.	2,402	2,332
Phosphates (industrial)	385	899
Plastics, n.e.s.	11,850	17,401
Rayon & transparent paper	59,895	67,841
Sewage	3,498	2,994
Soap, glycerine & detergents	28,136	30,463
Sugar refining	181	192
Sulphate of ammonia	69,464	70,656
Sulphates of copper, nickel, etc.	2,529	3,191
Sulphate of magnesium	28	53
Superphosphates & other phosphoric fertilisers	145,659	148,291
Tar & benzole	4,848	5,608
Textile uses	3,052	3,548
Titanium oxide	113,972	117,347
Unclassified	44,311	50,178
Total	633,544	673,139



# Fast erection of new plants will boost Hungarian chemical, fertiliser output

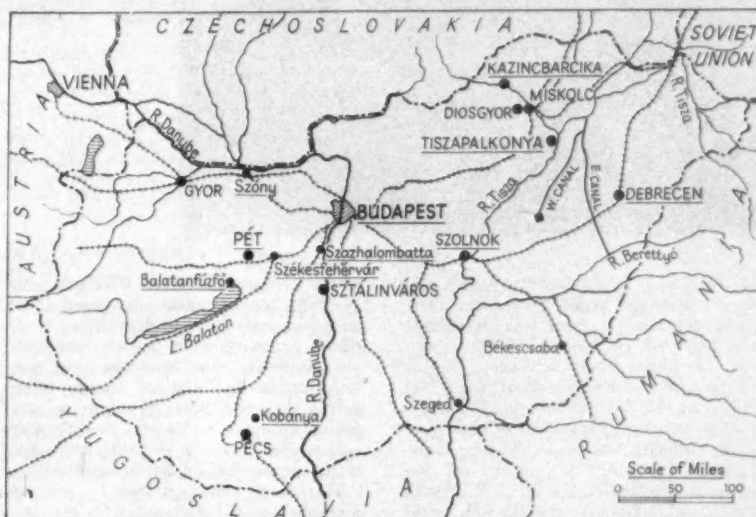
**H**UNGARY'S ambitious plans for the further development of her chemical industry during the next four years, by the end of which time production is expected to be double that of 1958, are not to be regarded lightly in view of the rapid progress made so far. The vigorous development of Hungarian industries which started after the second world war led to a situation where, by 1958, 55% of national revenue came from industry, although 86% of the country was under cultivation. In the past few years, the pace of development of the chemical industry has surpassed that of industry as a whole, comparative indices for gross production, on the basis of 1949 = 100, being as follows:

Year	Industry as a whole	Chemical industry
1960	325	598
1958	266	447
1955	228	317

The increased production of the chemical industry is all the more noteworthy because Hungary is rather poor in basic materials. She has no rock salt or raw phosphate, the major part of her demands in sulphur are covered by imports and her oil production can suffice only 42% of industrial needs, it being necessary to import crude oil in considerable quantities. The only indigenous basic material for chemical industry to be found in abundance is bauxite.

Petrochemical developments are bound to ensue following the projected expansion of the Szőny refinery—Hungary's largest at present but which will be surpassed by a new refinery to be built at Százhalombatta, which will be served by a crude oil pipeline from U.S.S.R., now under construction, and by a 600,000 kwh power plant.

In the period 1961-65, it is planned to invest some 3,000 million forints in the chemical industry (at the official rate of exchange, 33 forints = £1). Of this, some 2,000 million forints will go to



Map shows main Hungarian chemical centres underlined

"general technical development" and the rest to automation of production. Stress-points of investment are synthetic fertilisers, plastics, synthetic fibres and drugs. Hungary intends to call a virtual stop to imports of synthetic fertilisers, plastics, chemical fibres and plant protection chemicals, thus saving some U.S. 10 million annually. Scheduled production figures for key chemical products in 1965 are shown alongside 1958 production figures in the following table.

Product	Actual production 1958 (tons)	Expected production 1965 (tons)
Nitrogen fertiliser	159,359	720,000
Phosphoric fertiliser	209,101	650,000
Sulphuric acid (100%)	130,441	400,000
P.v.c. resin	10,000	12,000
Caustic soda	10,000	35,500
Hydrochloric acid	18,793	32,500
Crude oil	832,362	2,000,000

Available chemical and mechanical en-

gineering resources in Hungary are not sufficient to cope with more than about a third of this extensive building and equipment programme, so that about two-thirds of the plant, equipment and machinery will be imported. It is anticipated that complete equipment for some 30 factories will be purchased abroad, and that Western sources will supply equipment and know-how for p.v.c., caustic soda and synthetic fibre plants. Thus, the Hungarian importing organisation Komplex was recently negotiating for the purchase from West Europe of plant for the manufacture of acetylene based on the partial oxidation of natural gas: the plant is needed in connection with a p.v.c. project—see under 'Plastics', below.

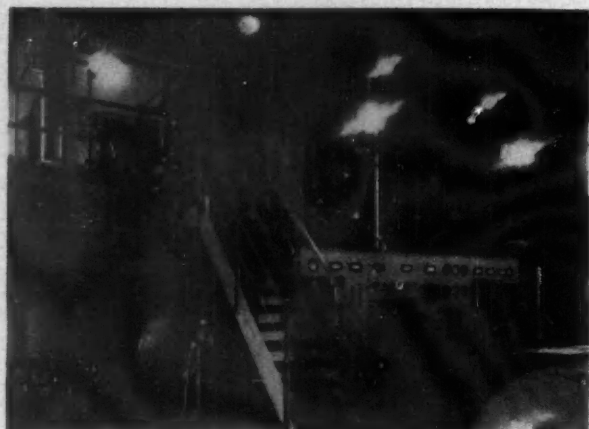
The speed at which these projects are to be implemented is illustrated by provision for the establishment of caustic soda and p.v.c. factories at the Berente works, in Kazincbarcika, within two years; of sulphuric acid and superphosphate factories at Szolnok within 30 months; and the starting of an electrolytic plant for sodium chloride at the Hungarian chemical works, Budapest, in 18 months.

Fertilisers dominate the inorganic side of Hungarian chemical industry and some details of projects now in hand for boosting output of both nitrogenous fertilisers and superphosphate were given in CHEMICAL AGE, 21 January, p. 150. At Péti, Hungary's oldest centre for nitrogen production, the works which was heavily bombed during the war was reconstructed at a cost of £3 million to produce artificial fertilisers. However, Hungary's most spectacular fertiliser project is that forms the biggest part of the new chemi-



This view of the Borsod fertiliser works shows, left, the suction dashpot of the huge Soviet compressor and, centre, carbon dioxide washing towers





Part of a caprolactam plant at the Hungarian chemical works, Budapest

cal complex at Tiszapalkonya, which will use natural gas piped from Rumania. Under construction here is a plant that will have an output of 350,000 tons/year of nitrogenous fertilisers—double the present combined output from Pét and from the Borsod works at Kazincbarcika. Another new project, for producing 200,000 tons/year of superphosphate, is at Szolnok; this plant will use phosphate rock from the U.S.S.R., North Africa and Israel. At the Borsod works it is expected that production of fertilisers will be 44,000 tons more than last year. The synthesis and acid plants are to be expanded.

**Inorganic chemicals.** There are three sulphuric acid factories in Hungary—two using the contact process and the third the chamber process. A certain amount of caustic soda is produced—90% of it in mercury cell installations—the bulk of caustic soda demands, however, is met by imports. A new chlorine plant is shortly to be built at Balatonfuzsó.

**Plastics.** Owing to the war, this sector of Hungarian industry is in a backward state compared with other parts of the world. Present production is centred mainly on products of the polycondensate type and polymers are produced only experimentally. Further development of plastics industry will start with the plant now being constructed at Kazincbarcika with an annual capacity of 6,000 tonnes of p.v.c. powder. This plant, costing about 500 million forints, is expected to make Hungary independent of imports of this material. However, the further development of the plastics industry is likely to take a considerable time and it is probable that future imports of other plastics will be considerable.

In the processing of plastics as opposed to their manufacture, Hungary has made considerable strides in the past year or two. In 1959 a number of large-capacity automatic machines for extrusion, moulding, etc., were imported and started operation. The processing of synthetic rubber for tyres is an industry which is well advanced both in the volume of production and in the techniques employed.

**Pharmaceuticals.** This is a field in which Hungary excels, the pharmaceutical industry having started at the beginning

of the century and given a new impetus after the second world war, since which time not only has production of traditional products been greatly expanded but numerous new products have been introduced. Outstanding among Hungarian pharmaceutical products is morphine, Hungary being the world's sixth largest producer and claiming first place in the production of crude morphine.

In fact, pharmaceutical industry accounts for the major part of the production volume of Hungarian chemical industry, the three most prominent production centres being those of the Chinoin, Gedeon Richter, and Wander organisations. Chinoin, with works in Budapest, have increased their production 16-fold since 1938, and produce not only drugs but antibiotics and vitamins. The modern antibiotics factory at Debrecen, hitherto known as the Hajdusag factory, is now being incorporated with an older factory there and renamed the Biogal works.

Along with the expansion of production capacity in the chemical industry goes an intensification of research and development effort, exemplified by the Central Chemical Research Institute recently opened in Budapest. It incorporates 40 laboratories and a 14,000-volume library and will undertake research commissions, including work with the use of radio-isotopes.

### First 'Dip.Techs.' in chemical engineering

FIRST students to qualify for the Diploma of Technology in chemical engineering gained their awards at the Battersea College of Technology and the Loughborough College of Technology. Loughborough Dip. Techs., with the names of the companies where industrial training was carried out, were as follows:

A. R. Evans (British Oxygen Co., Engineering Division, London); R. D. Turney (Courtaulds, Coventry); J. J. C. Freeman (B.O. Engineering Division); D. G. S. Hirst (CIBA Laboratories, Grimsby); N. J. Stockley (Whiffen and Sons, Loughborough); M. J. Berry (British Celanese, Spondon); A. J. Buxton (Albright and Wilson (Mfg.), Oldbury).

### New Standards for laboratory glassware

THE revised B.S. 2021, for separating and dropping funnels, introduces an alternative design (Types 1B and 2B) for the spherical and conical funnels in which the bulb expands directly from the upper side of the stopcock. This is intended for use with liquids having a tendency to emulsify. The spherical and conical types have now been specified as separating funnels, and the cylindrical types (plain or graduated) as dropping funnels.

Reduction of unnecessary variety in types and size of gas washing bottles used in laboratories is the aim of a new edition of B.S. 2461, and the number of types specified has been cut from three to two. The special 250 ml. Drechsel bottle fitted with an upward-facing flat sintered glass distributor is omitted and, instead, the general purpose Drechsel bottles as now specified are fitted either with a sintered glass distributor or with a plain tube.

Copies of these standards may be obtained from the British Standards Institution, Sales Branch, 2 Park Street, London W.1, price 5s for B.S. 2021 and 4s for B.S. 2461 (postage extra to non-subscribers).

### New edition of A.B.C.M. directory

THE 1961 edition of the Association of British Chemical Manufacturers' directory, 'British chemicals and their manufacturers', has been published. The directory is produced at two-yearly intervals and the new edition provides full details of the alterations and additions which have occurred in the list of products since 1959.

The directory is available free of charge to all firms and persons interested in buying chemicals and related products. All enquiries should be addressed to A.B.C.M. at Cecil Chambers, 86 Strand, London, W.C.2.

### Course on small-scale chemical techniques

A Saturday morning course entitled 'An introduction of micro- and semi-microchemical methods' will commence on 13 January 1962 at the Norwood Technical College, London S.E.27. Particularly suitable for teachers, industrial and research chemists, the course is designed to survey the principal branches of chemistry in which small-scale methods have been successfully applied. Application forms for admittance to the course may be obtained from the secretary of the College. The London fee for the course is £1.

### Mapel links with South African pipe firm

Metal and Pipeline Endurance Ltd., specialists in cathodic protection and welding inspection, have associated with Hume Pipe Co. (South Africa), who claim to be the largest pipe suppliers in the Union. Mr. J. E. Hay of the U.K. company will co-operate with the South African firm in setting up a joint organisation.

## Overseas News

# Swedish firm plans big expansion of fertiliser plants

**A**N expansion of fertiliser production is to be undertaken by Svenska Salpeterverken of Sweden at a cost of Kr.125 million (£8.6 million). Salpeterverken, who are partly owned by the Swedish Co-operative Union and the Federation of Swedish Farmers Associations, are to buy the ammonia plant of the State-owned shale oil company, Skiferolje, together with some of their land, and will build further manufacturing units.

The new plants are expected to go into production early in 1964 and will produce 30,000 tons of methanol and 30,000 tons of nitric acid a year.

At Köping, the present site of the Salpeterverken manufacturing units, the coke-based ammonia plant will be scrapped, and an ammonia plant based on oil will take its place. Nitric acid production will be doubled to 140,000 tons a year. Cost of the expansion on this site will be Kr.62 million.

## Changes in Canadian tariff rates

Chemicals are affected by changes made in the Canadian tariff which are due to expire on 31 October 1963. Under these changes methyl alcohol imported for use exclusively in the production of formaldehyde is free under all headings. Urethane and methyl pentanal for use in the manufacture of meprobamate is free under British Preferential and Most Favoured-nation Tariffs and chargeable at 25% under the general tariff; acetyl sulphamethazine and acetyl acetone for use in sulpha drugs are subject to the same rates as urethane and methyl pentanal.

## Synthetic fibre plant for Iraq

Early 1964 has now been given as the opening date for a cellulose-fibre plant on the Hindiyah Dam in Iraq which will have an initial annual capacity of 3,000 tonnes of rayon and 5,000 tonnes of 'rayon wool'. The plant is being planned for the Iraqi Government by the Swiss firm of Ing. A. Maurer S.A., Berne. With auxiliary installations, the plant will cost some 14 million Iraqi dinars.

## Upward revision for Polish chemical plant

A revision has been made to original chemical industry targets in Poland for next year, by which chemical products worth 500 million zloty more than foreseen for the year in the current five-year plan are to be produced. Chemical production, in which some 9,500 million zloty will be invested over 1962, will rise in value to 13.5% more than for this

year and result in profits of some 11,000 million zloty. The output of chemical products "intended for direct sale" is to be raised by 10% over the year, special stress being laid on production of plastic products and synthetic detergents. The annual investment level of 9,500 million zloty is to continue into the years following 1962.

## Fertiliser industry for Ecuador

A report on development possibilities for chemical fertilisers and basic chemicals in Ecuador, prepared by a team of foreign technicians at the invitation of the Ecuador Government, has recommended the domestic manufacture of ammonium sulphate in joint operation with a sulphuric acid plant as the first step in providing the country with a fertiliser industry. Imports of fertilisers have increased steadily during the past five years, from U.S.\$600,000 in 1956 to U.S.\$1.4 million in 1960. Nitrogenous materials constitute the bulk of the fertilisers used in the Costa region, whereas complete compound fertilisers are required in the Sierra.

## Japan may export nylon cord know-how to Switzerland

Negotiations have been taking place between Nippon Rayon and Inventa AG on the possibility of exporting Japanese know-how for the manufacture of nylon tyre cord to Switzerland. The Japanese firm is waiting confirmation from Inventa, so that details of the contract can be drawn up.

## Two Canadian firms to produce sorbitol

Two Canadian companies plan home production of sorbitol, which is at present imported, mainly from the U.S.

Most recent firm to announce production plans is the Atlas Powder Co. of Canada Ltd., of Brantford, Ont. Earlier Howards and Sons Canada Ltd., of Cornwall, Ont., had announced a project. Both companies expect to be in full production early in the new year.

Sorbitol is produced from pure cane sugar or corn sugar, materials readily available in Canada.

## C.I.A. establishes international committee

Establishment of an international committee of the U.S. Chemical Industry Association, under the direction of William D. Gersumky, vice-president of Robert S. First, Inc., has been announced by Richard S. Mooney, C.I.A. president. Formation of this committee was prompted by C.I.A.'s desire to provide a more thorough understanding of the

impact of world-wide chemical developments on the United States chemical industry. The committee's programme calls for international cooperation through increased contact and understanding between industry members engaged in the international field.

The spirit of international understanding was introduced by the C.I.A. at its October meeting when John D. J. Moore, vice-president of W. R. Grace and Co. spoke on the mounting crises in Latin America.

## Utilisation of natural gas in the U.S.S.R.

About 45,000 million cu.m. of natural gas were consumed last year in the Soviet Union, where its usage as a raw material in the chemical industry accounted for 4.2% of the total, compared with 2.6% in 1959 and 1.2% in 1958. The following is a break-down of consumption:

	%
Electricity production	27.1
Miscellaneous industries	13.6
Petroleum, gas and carbon black	13.2
Towns gas	12.6
Metallurgical industry	11.2
Processing of metals	7.5
Portland cement	6.5
Chemicals (as raw material)	4.2
Other industries and exports	4.1

## Sulphuric acid forecasts for Japan

Long range forecasts for sulphuric acid demand in Japan have been announced by the Chemical Fertiliser Section of the Basic Problems Discussion Council on Chemical Industry. The totals given in terms of 100% acid are: 1961, 4,790,000 tonnes; 1962, 4,962,000 tonnes; 1963, 5,190,000 tonnes; 1964, 5,441,000 tonnes; 1965, 5,689,000 tonnes; and 1970, 6,921,000 tonnes. These new forecasts differ somewhat from the estimates published by the Sulphuric Acid Association in July. In general the latest estimates are lower.

## Australia may impose duty on glycerine

The Australian Tariff Board is to enquire into whether a temporary duty should be imposed on glycerine which at present enters the country duty free under British preferential tariff.

The Tariff Board is also to report on whether assistance should be accorded to the following: menthol and thymol; sodium cyclamate; and pentabarbitalone sodium.

## German-built p.v.c. plant for Hungary

Current Hungarian imports of p.v.c. will be checked by the production of a new plant being built in the country by Friedrich Uhde GmbH, Dortmund, West Germany. The unit will begin operations on a carbide-acetylene basis and will later be converted to work on a cracker-acetylene base. A monomer vinyl chloride plant working to the process of Farbwerke Hoechst AG—Uhde's majority shareholder—a chlorine plant and a



unit to process chlorine into hydrochloric acid will form part of the Hungarian works. (See also page 855).

### Oxygen project in Spain

Authorisation for setting up a plant at Luchana-Baracaldo, Vizcaya, Spain, to produce 32 million cu. m. of liquid and gaseous oxygen, 60 million cu. m. of residual nitrogen and 60,000 cu. m. of other gases is being sought by the Spanish company Oxigeno del Norte. Importation of machinery valued at 110 million pesetas (£650,000) is envisaged.

### Ube sign polythene contract with U.S. firms

A contract has been signed provisionally by the Ube Industries Ltd. of Japan and the U.S. companies Rexal Drug and Chemical and El Paso National Gas under which the Japanese company will receive know-how for the production of high density polythene. The contract will shortly be submitted for Japanese Government approval.

### Gulf Oil raise throughput of Philadelphia refinery

Gulf Oil Corporation, U.S., have increased the crude oil throughput of their Philadelphia refinery to 135,000 bbl./day—an increase of 15,000 bbl./day over its throughput of 1 October. Several idle units will also be put back into operation early next year.

### CIBA to pool know-how on photochemicals

CIBA AG, Basle, have reached agreement with Soc. Lumière, Paris, under which the two companies will work closely together in the development of photochemicals. Scientific, technical and marketing know-how is to be pooled.

### Change in Indian duties on styrene, vinyl resins

Styrene, cellulose plastics, except cellulose acetate, and vinyl resins when imported into India will in future be exempt from duty in excess of 25% *ad valorem*.

### Soviet/Ethiopian refinery agreement

An agreement has been signed between the U.S.S.R. and Ethiopia under which the Soviet Union will build a refinery at Assab on the Red Sea. The contract—valued at about £4 million—will be awarded soon. The projected annual output of the refinery will be 500,000 tons of petroleum products, an amount far in excess of Ethiopia's domestic needs.

### French financial support for Brazilian synthetic rubber plant

Two French State banks, Comptoir National d'Escompte and Credit Lyonnais, have announced their intention to finance the erection of a synthetic rubber plant near Cabo in the Brazilian State of Pernambuco. The plant will cost some NF.61.5 million. Operating company, to whom the banks' credit will be granted, is the Brazilian concern Companhia Pernambucana de Borracha Sintetica.

It was reported in C.A., 16 September, p. 407, that the Government of Pernambuco had asked the National Credit Bank to grant credit of 1,500 million cruzeiros and to take over guarantee for a further \$U.S.13 million to make possible the building of a synthetic rubber plant.

### Synthetic diamonds produced experimentally in U.S.S.R.

Success, for the first time in the U.S.S.R. in the experimental industrial manufacture of artificial diamonds, is reported from the Ukraine. It is stated that the synthetic diamond industry requirements of industry in the U.S.S.R. will be met by home production in the near future. Some 2,000 carats of artificial diamonds were produced on the occasion of the 22nd Congress of the C.P.S.U., and the plan for 1961 has been overfulfilled fourfold.

### Indian softening-agent plant to be expanded

The softening-agent plant opened in Ghatkopar, India, earlier this year by the Bombay concern Indo-Nippon Chemical Co. Ltd. is to have its capacity doubled, so steady is the increase in home market demand. The operating company is a joint subsidiary of Gandhi Parekh Investment Corporation Pvt. Ltd., India, and Japan Cotton and General Trading Co. Ltd., of Osaka, Japan.

### New platform for Freeport's offshore sulphur mine

A second production platform is to be added to the Grand Isle, La., offshore sulphur mine of the Freeport Sulphur Co. The extension, measuring 1,500 ft., will bring the overall length of the structure to 4,076 ft. The project is located in 50 ft. of water seven miles off the coast of Louisiana. Commercial operation began in June 1960, and the mining plant has proved to be highly efficient and fully capable of weathering offshore conditions including the recent hurricane,

Carla. The new platform, which is being erected in accordance with the original development plans, will make it possible to drill an additional 108 wells from the enormous steel island.

Cost of the addition is expected to be about \$3.5 million, bringing the total expenditure for the project to about \$30 million. Bids for fabrication of the new arm will be let in late December. Erection is expected to get under way next summer and operation to begin in 1963.

Five platform bridges 200 ft. long, another 50 ft. long and the 224-ft. production platform will form the second leg.

### Stepan phthalic plans

Name of the U.S. company which is to build a \$7 million phthalic anhydride plant at Puerto Rico is 'Stepan' and not 'Stephen' as stated in 'Overseas News' last week. Output is estimated at 40 million lb./year. Construction will be handled by Ralph M. Parsons Co., Los Angeles, and the plant will use the Von Heyden-Chemiebau process.

### U.S.-German oil refinery project in Mannheim

Building of an oil refinery at Mannheim, West Germany, is the subject of an agreement between Marathon International Oil, U.S., and the Germany oil company, Wintershall AG. Marathon is a subsidiary of Ohio Oil, who have large crude oil reserves in Libya.

### Monsanto-Sidac link to make Safflex sheeting

Belgian subsidiary of Monsanto Chemicals—Monsanto Belgium—have started production at their new Ghent plant to make Safflex sheet and foil. The raw material, polyvinyl butyral, is imported from the U.S. Sidac of Ghent, whose name will shortly be changed to Union Chimique Belge, have a 25% interest in this project. Sidac make cellulose acetate using Monsanto know-how.

## U.S. research will cost \$6,000 m. in 1962, increased emphasis on space and defence

RESEARCH spending in the U.S. will amount to almost \$6,000 million in 1962, according to estimates given by an economist of the Battelle Institute at the annual meeting of the National Association of Business Economists held in Chicago. It is estimated that the Government will spend about \$10,000 million, an amount which reflects the increased emphasis on space and defence research. Industry is expected to spend about \$5,500 million, an increase of \$600 on the 1961 estimate, and universities and foundations will spend about \$350 million. In 1960, research spending in the U.S. totalled \$14,000 million.

The forecast of industrial research spending was based on a new method. A cash flow was considered instead of the usual standard surveys of industrial

spending. The method was based on the assumption that management views spending for research as an investment. Because funds for investment in research cannot ordinarily be obtained from outside sources, these funds must be generated within industry from retained earnings and depreciation. Thus, industrial support of research is a function on the cash flow in industry.

According to the Battelle economist, the Government supported 57% of all research in the U.S. in 1960 and it is likely that it will continue to provide over half of all research funds for some time. However, most of the government research funds go to industry which supports the majority of U.S. research work—about 75% in 1960.



# NEW CORROSION-RESISTANT USES FOR PLASTICS-COATED STEEL

## Engineering, Materials and Design Exhibition

USE of synthetic resins in the electrical industry and p.v.c.-coated steel laminates were the subjects of two papers presented at the conference on engineering material and design which was held in conjunction with the second Engineering Materials and Design Exhibition at Earls Court, London, from 13 to 18 November. Exhibits included a wide range of chemical plant in plastics and synthetic rubbers.

In his paper on 'Recent developments in insulating materials', Mr. J. Wainwright, of the English Electric Co. Ltd., spoke of U.S. research work on fluorine compounds. He referred to sulphur hexafluoride which, with a dielectric strength of 2 atm. pressure, had been used as an arc-extinguishing medium for circuit breakers. He felt that in this country the stress would be placed on sulphur hexafluoride rather than on other gases.

Mr. Francis Smith, John Summers and Co. Ltd., estimated U.S. consumption of p.v.c./steel laminates as approaching 75 million sq. ft./year. Despite overcapacity, he thought the future prospects were good. After referring to architectural uses, Mr. Smith spoke of the development of welding techniques which now made it possible to weld by projection resistance the plastics-coated steel sheets without damage to the p.v.c. surface.

Mr. N. Vinson, Plastic Coatings Ltd., also saw a big future for plastics coatings. Stainless steel was not only becoming more expensive, it was subject to long delivery delays and it was not totally corrosion-resistant. On the other hand, all-plastics fabrications were basically weak, while painting was an expensive form of protection with its high labour costs.

Among interesting developments seen at the exhibition by CHEMICAL AGE staff were the mild steel and aluminium strip produced in continuous coils by Coated Strip Ltd. and coated with p.v.c. In this process strip can be coated with films of plastisol up to 0.014 in. thick or by p.v.c. in thicknesses of 0.002 in. to 0.003 in.

E. and F. Richardson Ltd. showed a wide range of coatings based on synthetic rubbers, epoxy and phenolic resins and polyurethanes. These coatings are applied to various items of chemical plant. A range of plant, including pumps, pipe fittings, and mixer blades were shown by Plastic Coatings Ltd. finished in a variety of plastics materials including p.t.f.e., p.t.f.c.e., p.v.c., nylon and polythene.

The newly developed fluid bed system of applying finely divided powders was featured by Polypenco Ltd. Materials used include nylon, epoxies, celluloses and vinyls. Polypenco also showed their range of engineering materials including nylon and p.t.f.e.

Polyester resins, notably Rockite dough moulding compounds, were displayed by British Resin Products Ltd. of the D.C.L. Plastics Group, and by United Coke and Chemicals Ltd. One use shown for U.C.C. Orkast polyesters was an exhaust stack.

An interesting application of glass-fibre products was a filament-wound tank of more than 300 gall. capacity produced for Whessoe Ltd. by Fibreglass Ltd. Tough Plastics Ltd. also showed chemical plant made from glass-fibre, including cyclone units, large storage tanks, etc.

D.S.I.R.'s National Engineering Laboratory showed some of their work, including the design of heat exchangers.

## Natta disputes validity of Eastman's 'stereosymmetric' polypropylene claim

THE claim of Eastman Kodak that they have developed a process which "forms a highly crystalline product which is a different propylene polymer designated by Eastman's scientists as the 'stereosymmetric' polymer of propylene" is questioned in a letter signed by G. Natta and I. Pasquon of the Institute of Industrial Chemistry, Polytechnic Institute of Milan, published in the November issue of *Rubber and Plastics Age*.

According to a Belgian patent (577,214) claimed by Eastman Kodak, a polymer described as 'stereosymmetric' polypropylene includes among its properties the following: (1) both polymeric and side chains are almost completely symmetric in all planes; (2) its melting point is at least 180°C; and (3) its tensile strength is at least 386 kg./cm<sup>2</sup>.

In his letter, Professor Natta claims that the characteristic quoted as (1) has no meaning, as it does not appear to be representable by a physical model. Moreover no experimental data is given differentiating the structure of 'stereosymmetric' polypropylene from the structure of previously known polypropylenes. The value indicated by (3) is not higher than that shown by previously known isotactic polypropylene.

In the course of research done at the Polytechnic Institute of Milan, Natta's team had the opportunity of repeating runs described in the Eastman Kodak patent, and they observed that the polypropylene obtained shows a crystallinity exclusively due to the presence of isotactic polypropylene. The only crystalline polypropylenes known at present, says Prof. Natta, are the following: isotactic head-to-tail polypropylene; syndiotactic

N.E.L. has developed a series of computer programmes to estimate feed-heater performance and to arrive at optimum design.

A.P.V.-Paramount Ltd. showed examples of high-tensile stainless steel castings in Paralloy MPH which corresponds to 17-4 PH precipitation hardening steel for which the company has an exclusive production and sales licence in the U.K. from Armco International.

Silcolor, a new system of 20 pigment dispersions for colouring silicone rubbers, was shown by I.C.I. Nobel Division. Pigmentation with a Silcolor is said to be simple, clean, convenient and extremely efficient. Production times can be cut and standard, even colours reproduced easily.

Silcoset room-temperature-curing silicone rubbers were also featured. These rubbers are used for potting and encapsulating electrical and electronic equipment; making flexible moulds for casting epoxy resins; etc.

Also included were the Silcolapse anti-foam agents used to suppress foaming in many industrial processes, and silicone rubbers and resin/glass laminates for electrical insulation.

head-to-tail polypropylene; and polypropylene with a head-to-head tail-to-tail enchainment.

The product prepared by the Milan team according to the procedure described by Eastman Kodak gives an X-ray Geiger spectrum which is identical with that obtained from isotactic crystalline polypropylene.

Melting temperatures of the crude product obtained by Prof. Natta, even after fractionation were not higher than the temperatures observed in the corresponding fractions of previously known high molecular weight isotactic polypropylene.

In addition, it appears that the mechanical properties of the polymers obtained according to the Eastman Kodak patent are not higher than that of previously known isotactic polypropylene.

Eastman/Kodak announced in January 1960 that a polypropylene plant was to be constructed at Longview, Texas (see CHEMICAL AGE, 23 January 1960, p. 171). The 20 million lb. a year plant is now on stream where polypropylene is made under relatively low pressure by a continuous process, which was developed in the Eastman laboratories at Kingsport. Polypropylene made under this system, say Eastman, has been produced and market tested semi-commercially for more than a year.

Eastman intend to produce a complete range of polypropylene resins from those with relatively low flow rates to those with extremely high flow rates. It is claimed that the low ash content of Eastman polypropylene heightens the polymer's resistance to thermal breakdown and improves stability to colour.

● **Dr. Alexander Ross** has been appointed European technical representative for M and T Chemicals AG, states Mr. C. H. Carpenter, Jr., general manager of the International Division of the parent company, Metal and Thermit Corporation. Dr. Ross, who will be headquartered in Zug, Switzerland, previously served as supervisor of organic research at Metal and Thermit's research centre in Rahway, N.J. In his new position he will be responsible for supplying the technical assistance required by M and T Chemicals AG in their contacts with European companies under licence to produce M and T inorganic and organometallic chemicals, organic coatings and electroplating chemicals. He will also provide technical service on M and T products produced in the U.S. and marketed in Europe.



E. V. Small



A. Ross

● **Mr. E. V. Small** has been appointed a director of Blaw Knox Chemical Engineering Co. Ltd. He trained with B.T.H. Rugby and subsequently served B.T.H. and A.E.I. in India for many years, being managing director of A.E.I. (India) from 1935 to 1947. On returning to England in 1947 he took charge of the B.T.H. Export Co., and in 1955 became a director of British Thomson-Houston, remaining managing director of the export company. Mr. Small became joint managing director of Associated Electrical Industries Export Ltd. in 1959 and in November 1960 retired from executive work and was appointed consultant to the company. In December 1960 he joined the board of Blaw Knox Ltd. and has recently become chairman of Boving and Co. Ltd.

● **Mr. D. M. Carment**, chairman of A. Boake, Roberts and Co. (Australia) Pty. Ltd., who is visiting the U.K. to discuss company activities, was guest of honour at a recent dinner given by the directors of Albright and Wilson Ltd. and A. Boake Roberts and Co. Ltd.



L. to r., Sir Sydney Barratt, chairman, Albright and Wilson Ltd., Mr. D. M. Carment and Mr. B. White, chairman, A. Boake Roberts and Co. Ltd.

## PEOPLE in the news

● **Mr. A. McL. Aitken**, who has been with Albright and Wilson since 1955, is to join the International Nickel Co. (Mond) as a development officer in the development and research department. He will be relinquishing his appointment as technical sales manager of the Kanigen department of A. and W. on 1 January.

● **Mr. H. Gelpke** has resigned his position as chairman and director of Gelpke and Bate Ltd., 7 Queen Street, London E.C.4, due to ill health. **Mr. P. J. Bate** has been elected chairman of the company and **Mr. J. P. Vallance** an additional director.

● **Mr. H. R. Sykes** has been appointed treasurer of the Steetley Company.

● **Professor P. Kuin** and **Mr. S. G. Sweetman** have been appointed directors of Unilever Ltd. and will later join the board of Unilever N.V. Professor Kuin joined Unilever in 1948 as economic adviser. Mr. Sweetman has recently been chairman of the U.K. company's margarine group.

● **Mr. L. A. G. Johnson** has been appointed managing director of Detel Products Ltd., manufacturing specialists in protective industrial paints. He succeeds his mother, **Mrs. Vivienne D. Johnson**, who continues as a director and as secretary to the company. Mr. Johnson, aged 37, joined Detel Products Ltd. as a sales representative after the second world war, subsequently became sales manager and was elected to the board in 1959.

● **Mr. A. G. Shakespeare** has been appointed head of the British Iron and Steel Research Association's steelmaking laboratories at the Sheffield research station.

● New buying manager at Lever Bros., Port Sunlight, is **Mr. J. F. M. Bangert**, who joined Unilever in 1950.

● **Mr. W. G. Watson**, who has been appointed Scottish representative of the Chemicals Division of Union Carbide Ltd., will share office facilities with the U.C.L. Alloys Division at Cornhill House, 144 West George Street, Glasgow, C.2 (Douglas 7753).

● **Mr. G. A. Jones**, previously production director of Ilford Ltd., has been appointed sales director with responsibility for home sales, export sales, marketing and advertising. **Mr. S. T. Ferris**, general sales manager, has been appointed a director and will, in due course, relinquish his position as general sales manager to undertake a number of special assignments concerned with the company's overseas subsidiaries, and with matters of policy relating to the Common Market.

● **Mr. T. Forrester**, manager of Colliery Explosives Ltd. will on 1 January become works manager of the Roburite factory of I.C.I. Nobel Division, in succession to **Mr. A. H. Baxter**, Roburite works manager since 1958, who retires on 31 December.



H. Jones, deputy chairman and joint managing director of the Geigy Co. Ltd. (see 'People in the News' last week)

● **Mr. M. D. Price**, technical director of Rentokil Group Ltd., 16 Dover Street, London W.1, was interviewed in the Associated Television programme, 'The Warning Voice,' on 17 November, when he answered questions on the extermination of pests such as rats, mice, flies, cockroaches, pigeons and starlings. Mr. Price was a member of the I.C.I. team which discovered gammaxene. More recently, he has produced chemical formulations which keep ships pest free throughout a voyage. He was responsible for introducing 'Scarecrow Strip' bird repellent which the Ministry of Works has used successfully on the National Gallery and the Royal Opera House, Covent Garden.

● **Dr. H. L. Riley** of United Coke and Chemicals Co. Ltd., Orgreave, has been appointed hon. lecturer in the applications of chemistry at Sheffield University. Other hon. lecturers appointed include **Mr. G. J. Collin** on liquid fuel combustion.

● **Mr. W. K. Ashcroft** has been appointed market research manager of Howards of Ilford Ltd., a member of the Laporte Industries Group. A graduate of Cambridge with an M.A. in natural sciences, he previously spent 16 years with Monsanto Chemicals Ltd., where his work included sales development and market research.



# BRITISH CHEMICAL PRICES

## GENERAL CHEMICALS

**Acetic Acid.** 10-ton quantities, 80% tech. in bulk, £77 per ton; in casks, £90 per ton; 80% pure in bulk, £83; in casks, £94; glacial, 98/100% in bulk, £93; in drums, £100.

**Acetic Anhydride.** Ton lots d/d, £128.

**Alum.** Ground, f.o.r., about £25.

**MANCHESTER:** Ground, £25.

**Aluminium Sulphate.** Ex-works, d/d, £15 10s to £18.

**MANCHESTER:** £16 to £18.

**Ammonia, Anhydrous.** Per lb., 1s 9d-2s 3d.

**Ammonium Chloride.** Per ton lot, in non-ret. pack, £33 2s 6d.

**Ammonium Nitrate.** D/d, 4-ton lots, £37 10s.

**Ammonium Persulphate.** Per cwt., in 1-cwt. lots, d/d, £6 13s 6d; per ton, in min. 1-ton lots, d/d, £123 10s.

**Ammonium Phosphate.** MAP., £106 per ton; DAP, £100 10s per ton, d/d.

**Antimony Sulphide.** Per lb., d/d UK in min. 1-ton lots; crimson, 5s 8d d/d to 6s 2d; golden, 3s 11d d/d per lb. to 5s 4d d/d.

**Arsenic.** Ex-store, £45 to £50.

**Barium Carbonate.** Precip., d/d, 4-ton lots or more, bag packing, £37 10s. per ton.

**Barium Chloride.** 2-ton lots, £45.

**Barium Sulphate [Dry Blanc Fixe].** Precip. 2-ton lots, d/d, £39.

**Bleaching Powder.** Ret. casks, c.p. station, in 4-ton lots, £30 7s 6d.

**Borax.** Ton lots, in hessian bags, c.p. Tech., anhydrous, £60 gran., £47 10s; crystal £51; powder, £52; extra fine powder, £53; BP, gran., £56 10s; crystal, £60; powder, £61; extra fine powder, £62. £1 cheaper in 5-ply paper bags.

**Boric Acid.** Ton lots, in hessian sacks, c.p. Comm., gran., £78 10s; crystal, £87 10s; powder, £85 extra fine powder, £87; BP gran., £91 10s; crystal, £99 10s; powder, £97; extra fine powder, £99. £1 cheaper in paper bags.

**Calcium Chloride.** Ton lots, in non-ret. pack; solid and flake, about £15.

**Chlorine, Liquid.** In ret. 16-17 cwt. drums d/d in 3-drum lots, £41.

**Chromic Acid.** In 1-ton lots, per lb., 2s 2½d.

**Chromium Sulphate, Basic.** Powder, d/d, 1 ton lots £77.

**Citric Acid—Granular.** In kegs, 1-4 cwt. lots, per cwt., £9 6s; 5-19 cwt. lots, per cwt., £9 2s; 1-ton lots, per cwt., £9 1s; packed in paper bags, 1-4 cwt. lots, per cwt., £8 19s; 5-19 cwt. lots, per cwt., £8 15s; 1-ton lots, per cwt., £8 14s.

**Cobalt Oxide.** Black, per lb., d/d, bulk quantities, 13s 2d.

**Copper Carbonate.** Per lb., 3s 6d.

**Copper Sulphate.** £78 per ton less 2% f.o.b. Liverpool.

**Cream of Tartar.** 100%, per cwt., about £11 12s.

**Formaldehyde.** In casks, d/d, £40.

**Formic Acid.** 85%, in 4-ton lots, c.p., £91.

**Glycerine.** Chem. pure, double distilled 1.2627 s.g., per cwt., in 5-cwt. drums for annual purchases of over 5-ton lots and under 25 tons, £9 12s. Refined technical grade industrial, 5s per cwt. less than chem. pure.

**Hydrochloric Acid.** Spot, per carboy, d/d (according to purity, strength and locality), about 12s.

**Hydrofluoric Acid.** 60%, per lb., about 1s 2d.

**Hydrogen Peroxide.** Carboys extra and ret. 27.5% wt., £115; 35% wt., d/d, £138.

These prices are checked with the manufacturers, but in many cases there are variations according to quality, quantity, place of delivery, etc. Abbreviations: d/d, delivered; c.p., carriage paid; ret., returnable; non-ret. pack., non-returnable packaging; tech., technical; comm., commercial; gran., granular.

All prices per ton unless otherwise stated

**Iodine.** Resublimed BP, under 1 cwt., per lb., 11s 6d; for 1-cwt. lots, per lb., 11s 3d.

**Iodoform.** Under 1 cwt., per lb., 24s 1d; for 1-cwt. lots, per lb., 23s 5d; crystals, 3s more.

**Lactic Acid.** Edible, d/d, 50% by wt., per lb., 16½d; 80% by wt., 26½d; C.P., 50% by wt., per lb., 14½d; 80% by wt., 23d; dark ex-works, 44% by wt., per lb. 9d. 1-ton lots, loaned containers.

**Lead Acetate.** White, about £154.

**Lead Nitrate.** 1-ton lots, about £135.

**Lead, Red.** Bases prices: 15-cwt. drum lots, Genuine dry red, £94 15s per ton; orange lead, £106 15s per ton; Ground in oil: red, £116 15s orange, £128 15s.

**Lead, White.** Bases prices: in 5-cwt. drums, per ton for 2-ton lots, Dry English £108 5s; Ground in oil, £128 10s.

**Lime Acetate.** Brown, ton lots, d/d, £40; grey, 80-82%, ton lots, d/d, £45.

**Litharge.** In 5-cwt. drum lots, £96 15s.

**Magnesite.** Calcined, in bags, ex-works, about £21.

**Magnesium Carbonate.** Light, comm., d/d, 2-ton lots, £84 10s; under 2 tons, £97.

**Magnesium Chloride.** Solid (ex-wharf), £19 7s 6d per ton.

**Magnesium Oxide.** Light, comm., d/d, under 1-ton lots, £245.

**Magnesium Sulphate.** Crystals, £14 15s, ex-works.

**Mercuric Chloride.** Tech. powder, per lb., for 1-ton lots, in 28-lb. parcels, 19s 6d; 5-cwt. lots, in 28-lb. parcels, 20s; 1-cwt. lots, in 28-lb. parcels, 20s 3d.

**Mercury Sulphide, Red.** Per lb. for 5-cwt. lots in 28-lb. parcels, £1 10s 6d; 1-cwt. lots, in 28-lb. parcels, £1 11s.

**Nickel Sulphate.** D/d, buyers UK, nominal, £170.

**Nitric Acid.** 80° Tw., £35 2s.

**Oxalic Acid.** Home manufacture, min. 4-ton lots, in 56 lb. paper bags, c.p., about £125-£130.

**Phosphoric Acid.** TPA 1,700 ton lots, c.p., £103; BP (s.g. 1.750), 1-ton lots, c.p., per lb., 1s 4d.

**Potash, Caustic.** Solid, 1-ton lots, £95 10s; liquid, £36 15s.

**Potassium Carbonate.** Calcined, 96/98%, 1-ton lots, ex-store, about £76.

**Potassium Chloride.** Industrial, 96%, 1-ton lots, about £24.

**Potassium Dichromate.** Gran., 1-ton lots, £131 16s. 8d.

**Potassium Iodide.** BP, under 1 cwt. per lb., 9s 0d., per lb. for 1-cwt. lots, 8s 9d.

**Potassium Nitrate.** 4-ton lots, in non-ret. pack, c.p., £63 10s.

**Potassium Permanganate.** BP, 1-cwt. lots, per lb., 2s 0½d; 3-cwt. lots, per lb., 1s 11½d; 5-cwt. lots, per lb., 1s 11½d; 1-ton lots, per lb., 1s 11d; 5-ton lots, per lb., 1s 10½d. Tech., 1-ton lots in 1-cwt. drums, per cwt., £10 3s; 5-cwt. in 1-cwt. drums, per cwt., £10 5s; 1-cwt. lots, £10 14s.

**Propylene Oxide.** Bulk lots, d/d, £162.

**Salmonia.** Ton lot, in non-ret. pack, £47 10s.

**Salicylic Acid.** MANCHESTER: Tech., d/d, per lb., 2s 6d, cwt. lots.

**Soda Ash.** 58% ex-depot or d/d, London station, 1-ton lots, about £16 11s 6d.

**Sodium Acetate.** Comm. crystals, d/d, £75 8s.

**Soda, Caustic.** Solid 76/77%; spot, d/d 1-ton lots, £33 16s 6d.

**Sodium Bicarbonate.** Ton lot, in non-ret. pack, £12 10s.

**Sodium Bisulphite.** Powder, 60/62%, d/d 2-ton lots for home trade, £46 2s 6d.

**Sodium Carbonate Monohydrate.** Ton lot, in non-ret. pack, c.p., £64.

**Sodium Chlorate.** 1-cwt. crums, c.p. station, in 5-ton lots, about £87 per ton.

**Sodium Cyanide.** 96/98%, ton lot in 1-cwt. drums, £126.

**Sodium Dichromate.** Gran. Crystals 1-ton lots, £109 13s. 4d., anhydrous, 1-ton lots, £126. All lots delivered d/d.

**Sodium Fluoride.** D/d, 1-ton lots and over, per cwt., £5; 1-cwt. lots, per cwt., £5 10s.

**Sodium Hyposulphite.** Pea crystals, £38; comm., 1-ton lots, c.p., £34 15s.

**Sodium Iodide.** BP, under 56 lb. per lb., 11s 3d; 56 lb. and over, 11s 0d.

**Sodium Lactate.** Edible, 70%, per ton, £150, d/d free drums, 1-ton lots.

**Sodium Metaphosphate.** Flaked, paper sacks, £136.

**Sodium Metasilicate.** (Spot prices) D/d UK in 1-ton lots, 1-cwt. free paper bags, £29.

**Sodium Nitrate.** Chilean refined gran. over 98%, 6-ton lots, d/d c.p., per ton, £29.

**Sodium Nitrite.** 4-ton lots, £32.

**Sodium Perborate.** (10% available oxygen) in 1-cwt. free kegs, 1-ton lots, £129 10s; in 1-cwt. lots, £139 5s.

**Sodium Percarbonate.** 12½% available oxygen, in 1-cwt. kegs, £170 15s.

**Sodium Phosphate.** D/d, ton lots: disodium, crystalline, £40 10s, anhydrous, £89; tri-sodium, crystalline, £39 10s, anhydrous, £87.

**Sodium Silicate.** (Spot prices) 75-84° Tw. Lancs and Ches, 6-ton lots, d/d station in loaned drums, £12 10s; Dorset, Somerset and Devon, per ton extra, £3 5s; Scotland and S. Wales, extra, £2 17s 6d. Elsewhere in England, not Cornwall, extra, £1.

**Sodium Sulphate [Desiccated Glauber's Salt].** D/d in bags, about £19.

**Sodium Sulphate [Glauber's Salt].** D/d, up to £14.

**Sodium Sulphate [Salt Cake].** Unground, d/d station in bulk, £10.

**MANCHESTER:** d/d station, £10 10s.

**Sodium Sulphide.** 60/62%, spot, d/d, in drums in 1-ton lots, solid, £38 2s 6d; broken, £39 2s 6d. Flakes, £40 12s 6d, crystals, £29 10s.

**Sodium Sulphite.** Anhydrous, £71 10s; comm., d/d station in bags, £27-£28 10s.

**Sulphur.** 4 tons or more, ground, according to fineness, £20-£22.

**Sulphuric Acid.** Net, naked at works, 168° Tw. according to quality, £11 10s—£12 10s per ton; 140° Tw., arsenic free, £9; 140° Tw., arsenious, £8.

**Tartaric Acid—Powder and Granular.** Per cwt.: 10 cwt. or more, in kegs, 294s; in bags, 286s per cwt.

**Titanium Oxide.** Standard grade comm., rutile structure, £178; standard grade comm., anatase structure, £163.

**Zinc Oxide.** Per ton: white seal, £90; green seal, £88; red seal, £85.

## SOLVENTS AND PLASTICISERS

**Acetone.** All d/d. In 5-gal. drums, £124; in 10-gal. drums, £114; in 40-45 gal. drums, under 1 ton, £89; 1-5 tons, £84;



5-10 tons, £82; 10 tons and up, £80; in 500-gal. tank wagons, £79. In bulk minimum 2,500 gal. £75 per ton.

**Butyl Acetate BSS.** 10-ton lots, £165.

**n-Butyl Alcohol BSS.** 10 tons, in drums, d/d, £137 10s.

**sec-Butyl Alcohol.** All d/d. In 5-gal. drums, £168; in 10-gal. drums, £158 in 40-45 gal. drums, under 1 ton, £133; 1-5 tons, £130; 5-10 tons, £129; 10 tons and up, £128; in 400-gal. tank wagons, £125.

**tert-Butyl Alcohol.** 5-gal. drums, £195 10s; 40/45-gal. drums: 1 ton, £175 10s; 1-5 tons, £174 10s; 5-10 tons, £173 10s; 10 tons and up, £172 10s.

**Diacetone Alcohol.** Small lots: 5-gal. drums, £185; 10-gal. drums, £175. 40/45-gal. drums: under 1 ton, £148; 1-5 tons, £147; 5-10 tons, £146; 10 tons and over, £145, in 400-gal. tank wagons, £142.

**Dibutyl Phthalate.** In drums, 10 tons, d/d per ton, £216; 45-gal. 1-4 drums, £222.

**Diethyl Phthalate.** In drums, 10 tons, per ton, £201; 45-gal. 1-4 drums, £207.

**Dimethyl Phthalate.** In drums, 10 tons, per ton, d/d, £194; 45-gal. 1-4 drums, £200.

**Diethyl Phthalate.** In drums, 10 tons, d/d, per ton, £287; 45-gal. 1-4 drums, £293.

**Ether BSS.** 1-ton lots, drums extra, per lb., 1s 11d.

**Ethyl Acetate.** 10-ton lots, d/d, £137.

**Ethyl Alcohol Fermentation grade (PBF 66 o.p.).** Over 300,000 p. gal., 3s 10½d; d/d in tankers, 2,500-10,000 p. gal. per p. gal., 4s 0½d. D/d in 40/45-gal. drums, p.p.g. extra, 2d.

**Absolute alcohol (74.5 o.p.), p.p.g. extra, 2d.**

**Methanol.** Pure synthetic, d/d, £46.

**Methylated Spirit.** Industrial 66° o.p.: 500-gal. and up, d/d in tankers, per gal., 5s 7½d; 100-499 gal. in drums, d/d per gal., 6s 0½d-6s 2½d. Pyridinised 66° o.p.: 500 gal. and up, in tankers, d/d, per gal., 5s 11d; 100-499 gal. in drums, d/d, per gal., 6s 4d-6s 6d.

**Methyl Ethyl Ketone.** All d/d. In 40/45-gal. drums, under 1 ton, £143 10s; 1-5 tons, £138 10s; 5-10 tons, £136 10s; 10 tons and up, £143; in 400-gal. tank wagons, £134 10s.

**Methyl isoButyl Carbinol.** All d/d. In 5-gal. drums, £203; in 10-gal. drums, £193; 40-45 gal. drums, less than 1 ton, £168; 1-9 tons, £165; 10 tons and over, £163; in 400-gal. tank wagons, £160.

**Methyl isoButyl Ketone.** All d/d. In 5-gal. drums, £209; in 10-gal. drums, £199; in 40/45-gal. drums, under 1 ton, £174; 1-5 tons, £171; 5-10 tons, £170; 10 tons and up, £169; in 400-gal. tank wagons, £166.

**isoPropyl Acetate.** 10 tons, d/d, 45-gal. drums £132.

**isoPropyl Alcohol.** Small lots: 5-gal. drums, £118; 10-gal. drums, £108; 40/45-gal. drums: less than 1 ton, £83; 1-9 tons, £81; 10-50 tons, £80 10s; 50 tons and up, £80.

## RUBBER CHEMICALS

**Carbon Disulphide.** According to quality, £61-£67.

**Carbon Black.** GPF: Ex-store, Swansea. Min. 3-ton lots, one delivery, 6½d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 7d per lb.; ex-store, Manchester, London and Glasgow, 7½d per lb. HAF: ex-store, Swansea; Min. 3-ton lots, one delivery, 7½d per lb.; min. 1-ton lots and up to 3-tons, one delivery, 8d per lb. Ex-store Manchester, London and Glasgow, 8½d per lb. ISAF: Ex-store Swansea, min. 3-ton lots in one delivery, 9½d per lb., min. 1-ton lots and up to 3-tons in one delivery, 10d per lb.

Ex-store Manchester, London and Glasgow, 10½d per lb.

**Carbon Tetrachloride.** Ton lots, £83 15s.

**India-Rubber Substitutes.** White, per lb. 1s 4½d to 1s 7d; dark, d/d, per lb., 1s 0½d to 1s 4d.

**Lithopone.** 30%, about £57 10s for 5-ton lots.

**Mineral Black.** £7 10s-£10.

**Sulphur Chloride.** British, about £50.

**Vegetable Lamp Black.** 2-ton lots, £64 8s.

**Vermilion.** Pale or deep, 7-lb. lots, per lb., 15s 6d.

## COAL TAR PRODUCTS

**Benzole.** Per gal., min. 200 gal., d/d in bulk, 90's, 5s 3d; pure, 5s 7d.

**Carbolic Acid.** Crystals, d/d bulk, per lb. 1s 2d; 40/50-gal. ret. drums extra, per lb., 1½d.

**Creosote.** Home trade, per gal., according to quality, f.o.r. maker's works, 1s-1s 9d. MANCHESTER: Per gal., 1s 3d-1s 8d.

**Cresylic Acid.** Pale 99/100%, per gal., 7s 9d D/d UK in bulk: Pale ADF, per imperial gallon f.o.b. UK, 8s; per US gallon, c.i.f. NY, 103.50 cents freight equalised.

**Naphtha.** Solvent, 90/160°, per gal., 5s heavy, 90/190°, for bulk 1,000-gal. lots, d/d, per gal., 4s. Drums extra; higher prices for smaller lots.

**Naphthalene.** Crude, 4-ton lots, in buyers' bags, nominal, according to m.p.: £22-£30; hot pressed, bulk, ex-works, £42; refined crystals, d/d min. 4-ton lots, £65-£68.

**Pitch.** Medium, soft, home trade, f.o.r. suppliers' works, £10 10s; export trade, f.o.b. suppliers' port, about £12.

**Pyridine.** 90/160, per gal., 20s about.

**Toluol.** Pure, per gal., 5s; 90's 2,000 gal. in bulk, per gal., 4s 9d. MANCHESTER: Pure, naked, per gal., 5s 6d.

**Xylole.** According to grade, in 1,000-gal. lots, d/d London area in bulk, per gal., 5s 4d-5s 6d.

## INTERMEDIATES AND DYES (Prices Normal)

**m-Cresol 98/100%.** 10 cwt. lots d/d, per lb., 4s 9d.

**o-Cresol 30/31°C.** D/d, per lb., 1s.

**p-Cresol 34/35°C.** 10 cwt. lots d/d, per lb., 5s.

**Dichloraniline.** Per lb., 4s 6d.

**Dinitrobenzene.** 88/99°C., per lb., 2s 1d.

**Dinitrotoluene.** Drums extra. SP 15°C., per lb., 2s 1½d; SP 26°C., per lb., 1s 5d; SP 33°C., per lb., 1s 2½d; SP 66/68°C., per lb., 2s 1d.

**p-Nitraniline.** Per lb., 5s 1d.

**Nitrobenzene.** Spot, 90 gal. drums (drums extra), 1-ton lots, d/d, per lb., 11d.

**Nitronaphthalene.** Per lb., 2s 5½d.

**o-Toluidine.** 8-10 cwt. drums (drums extra), per lb., 1s 11d.

**p-Toluidine.** In casks, per lb., 5s 9d.

**Dimethylariline.** Drums extra, c.p., per lb. 3s 2d.

## Polymer's rubber project in Europe under way

THE butyl rubber plant planned for the U.K. or Europe by the U.S. Polymer Corp., which has been held up by the patent situation, is now under way. An announcement is expected by the end of the year. Polymer's president has predicted that the company's output of synthetic rubber will increase by about 40% by 1965 in order to meet world demand. Polymer's 20,000-ton polybutadiene unit at Sarnia will be completed in 1962.

## In Parliament

### Saharan methane to be raised on adjournment

The question of imports of Saharan methane is to be raised in an adjournment debate by Mr. H. J. Boyden (Lab., Bishop Auckland) following the Minister of Power's refusal to publish a White Paper giving details of the companies involved, the terms of the agreement signed by the Gas Council, and details of the proposed investment. Mr. Wood said he was not responsible for the commercial arrangements.

In answer to another question, Mr. Wood said there was no future certainty of natural gas being available for export from the discovery in northern Holland.

### Research report on poisonous substances

Mr. C. Soames, Minister of Agriculture, last week stated that the report of the research study group on poisonous substances used in agriculture would be published shortly.

### Big response to appeal by Aberystwyth College

FIRST subscription list following the appeal for £300,000 by the University College of Wales, Aberystwyth, shows a total of £151,450. Contributions include the following:

Unilever Ltd. £7,500; Imperial Chemical Industries Ltd., £7,000; Courtaulds Ltd., £2,500; Boots Pure Drug Co. Ltd., £2,000; Beecham Group Ltd., £1,750; Esso Petroleum Co. Ltd., £500; Powell Duffryn Ltd., £250; Thomas Hedley and Co. Ltd., £250; Wales Gas Board, £105. The first five will be paid under covenant or by annual contribution.

### New method of calculating dutiable oils

From 1 December the methods approved for use in calculating gallons at 60°F for Customs purposes in the case of all artificially heated heavy hydrocarbon oils of petroleum origin will be based on the ASTM-IP petroleum measurement tables (British Edition 1953) instead of on Tables A and B as shown in Customs Notice No. 358. Notice No. 358 will still apply to heavy oils of coal-tar origin.

### B.A.S.F. polyisobutylene

Polyisobutylene produced by Badische Anilin und Soda Fabrik is now sold through B.A.S.F. (United Kingdom) Ltd., Abbey House, Victoria Street, London S.W.1, who are covering U.K. demand with B.A.S.F.'s other distributors for this material, Allied Colloids Ltd., Bradford. 'Project News', 4 November, incorrectly stated that F. A. Hughes and Co. Ltd. were still U.K. distributors.

### Glycerine prices

Home trade prices of refined glycerine were cut on 13 November by £10/ton by Glycerine Ltd., 8 Tudor Street, London E.C.4, from whom copies of the new price list are available.

## TRADE NOTES

### Shell isoprene price cuts

Shell Chemical Co. Ltd. have reduced the prices of Cariflex isoprene rubbers by 2d/lb. The new ex-store prices will be: I-300 and I-305, 24.5d/lb.; I-500, 21.5d/lb.

### New B.D.H. chemicals

Additions made to the B.D.H. range of chemicals in November are: ethyl cellulose; *o*-fluorophenol; hydroxyethyl cellulose; and 1,1,1-trichloroethane.

### Agents for Desulfurol

John Thompson (Australia) Pty. Ltd. have been appointed agents in Australia and New Zealand for Desulfurol sulphur inhibitor and fuel improver and other products in the range of fuel treatment and combustion additives made by Combustion Chemicals Ltd. Steam and Mining Co. Ltd., Johannesburg, have been appointed South African agents for the British company.

### Hoechst waxes

On 1 January 1962 the agency for waxes manufactured by Farbwerke Hoechst AG, Werk Gersthofen, will be transferred from Cornelius Produce Co. Ltd to Hoechst Chemicals Ltd., 50 Jermyn Street, London S.W.1. This is in line with the overall policy of Farbwerke Hoechst of concentrating the sale of their products.

Hoechst Chemicals are establishing a wax section within their Chemical Divi-

sion, and for this purpose commercial and technical sales personnel have been specially trained at Hoechst. To ensure a smooth change-over, it has been amicably agreed that Cornelius Produce will assist with distribution for the first six months of 1962.

### Roving for glass depositors

A new roving for use in the simultaneous deposition of glass fibre and resin has been developed by Deeglas Fibres Ltd., Prince Consort House, 27-29 Albert Embankment, London SE1, a subsidiary of BTR Industries Ltd. The new roving, Type A29/6, is an alkali glass composition and is claimed to give improved chopping together with a quick 'wet out'—advantages which allow extremely fast operation. A similar roving of alkali-free glass, Type E29/6, is also available.

### Inventions Exhibition

The International Inventions and Commercial Development Exhibition, the first of its kind for 10 years, is to be held at the Central Hall, Westminster, from 16-24 February 1962. The exhibition is open officially to large commercial firms in every field and also to the thousands of aspiring inventors throughout the country seeking an outlet for their talents.

The exhibition is being presented by Empson and Turner Ltd. in association with the Institute of Patentees and In-

ventors. There will be exhibits representing every branch and field of British industry with several entries from overseas.

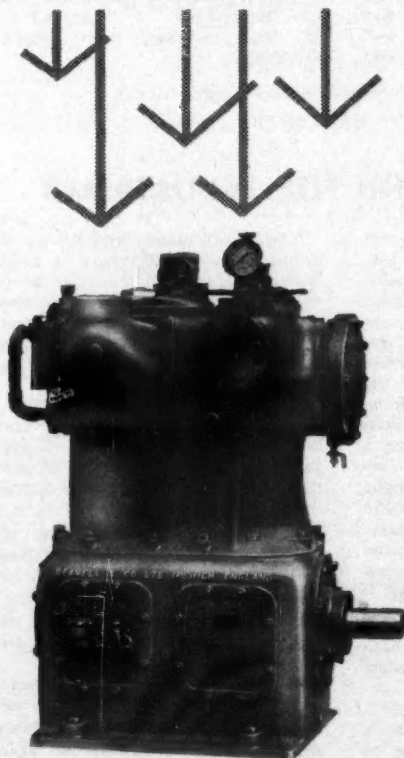
Information about the exhibition is available from David Wynne-Morgan and Associates Ltd., Thorn House, Upper St. Martin's Lane, London W.C.2.

### Rubber products literature

The Federation of British Rubber and Allied Manufacturers have produced an illustrated booklet designed to publicise the British rubber industry in the seven other countries of EFTA. Six different versions are being published in the six languages concerned and copies are being sent to selected industrial users, importers, department stores, hospitals and other prospective customers.

### Dangers in hydrogen installations

A report entitled 'The latent danger inherent in a hydrogen liquefier installation' (AERE Trans 871) is available from the Library, Atomic Energy Authority Research Establishment, Establishment, Harwell, Berks. The author describes an attempt to assess the dangers which may arise in a hydrogen liquefier apparatus and to derive some conclusions on the best safety precautions. For this purpose experiments were carried out on the electrostatic charge of solid crystals in liquid hydrogen were carried out, explosion tests on mixtures of solid oxygen and liquid hydrogen were conducted and a survey of all accidents in this field was attempted.



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## Commercial News

### Beecham Group

With total sales of £28,569,000 for the half-year ended 30 September, compared with £26,988,000 for the same half of 1960, the Beecham Group Ltd. recorded a net profit of £2,104,000 (£2,194,000). An interim of 16% is declared; this, the only interim dividend to be declared on account of the year, compares with two interims aggregating 16% paid on account of the previous year.

### Evans Medical

Evans Medical Ltd. announce that acceptances have been received from holders of over 90% of the Preference and Ordinary share capital of Lofthouse and Saltmer, manufacturing chemists, of Hull.

### Gelpke and Stratton

Gelpke and Bate Ltd. and Stratton Chemicals Ltd. have acquired a minority interest in the share capital of each other, in order to further the close co-operation already existing between the two companies in the distribution of bulk liquid organic solvents.

Following this exchange of interests, Mr. K. Skelton has become a director of Stratton Chemicals and Mr. T. M. Ellis has become a director of Gelpke and Bate. The two companies will continue to function as previously from their existing addresses.

### United Indigo

United Indigo and Chemical are to pay off two-and-a-half years' arrears of preference dividends to 30 June. The Pfeffer brothers who control 60% of the capital have offered to buy the remainder at 7s per 5s Preference share and 1s 10½d for each 1s 4d Ordinary share.

### Celtex

Celtex, the French chemical holding company with majority holdings in companies including the British concerns, Foreign Industrial and Commercial Co. Ltd. and Cellophane Investment Ltd., and whose link-up with the French Rhône-Poulenc chemical company was reported in *CHEMICAL AGE*, 15 July 1961, are to change their name to Pricel (Participations Industrielles et Cellulosiques). This change of name will take place on the completion of Celtex capital decrease from N.Fr. 300 million to N.Fr. 50 million and the 10:6 distribution of Rhône-Poulenc shares to Celtex shareholders.

### Royal Dutch/Shell

Sales and operating income of the Royal Dutch/Shell Group in the third quarter of 1961 totalled £717 million (£674 million in the same 1960 period), bringing the total for the first nine months to £2,070 million (£2,003 million). Net income for the third quarter was £43.85 million (£44.11 million), while the nine-months result was £130.56 million

- Over 90% acceptance of Evans Medical offer
- United Indigo to pay off dividend arrears
- Royal Dutch/Shell third quarter results
- B. Fr. 11 m. profit increase for U.C.B.

(£129.06 million). Capital and explorations spending in the nine months was £268.8 million (£303.8 million). Interim dividends of £30.2 million in respect of 1961 were distributed to the parent companies in the third quarter. Royal Dutch/Shell are owned 60% by Royal Dutch Petroleum and 40% by 'Shell' Transport and Trading.

### U.C.B.

Union Chimique Belge announce for the financial year ended 30 June 1961 a net profit of B.Fr.72 million (1959/60: B.Fr.61 million) after a gross trading surplus of B.Fr.266 million (221 million) and depreciation of B.Fr.177 million (143.5 million). The company's board has recommended a dividend for the year under report of B.Fr.65 (50) net per share.

### Sidac

The Belgian concern Société Industrielle de la Cellulose (Sidac) has issued its balance sheet for 1961 only up to 30 June owing to its participation in the planned merger of a number of leading Belgian chemical companies, announced in *CHEMICAL AGE*, 16 Sept., p. 396. Net profit for the first 1961 half-year was B.Fr.27,330,000, against B.Fr.48,330,000

for the whole of last year. A net dividend of B.Fr.50/share will be paid, as against B.Fr.100/share for all of 1960.

The Fabelta company of Brussels, involved in the same transaction, has announced separately that net profit in the financial year ended 30 June 1961 was B.Fr.89,900,000 (69,830,000).

### Kuhlmann

At a date to be announced later the shares of Manufactures de Produits Chimiques du Nord Etablissements Kuhlmann S.A., Paris, are to be quoted on the Frankfurt Stock Exchange.

### Pfizer

Chas. Pfizer and Co., U.S., are to pay an extra 25 cents plus the regular quarterly 15 cents dividend on the common stock. An extra 20 cents was paid a year ago.

Pfizer are to acquire Thomas Leeming and Co., producers of ointments, and Pacquin Inc., who make hand cream and toiletries.

### INCREASE OF CAPITAL

GLOVERS (CHEMICALS) LTD., Wortley Low Mills, Leeds 12. Registered capital has been increased from £50,000 to £100,000.

## Market Reports

### STEADY DEMAND FOR INDUSTRIALS

**LONDON** Demand for industrial chemicals generally has been steady and most sections of the market have experienced a fair weight of new business, including a steady flow of inquiry for export. Prices for the most part are unchanged with a firm undertone, the main exception being the weak trend in the non-ferrous metal compounds. Home trade refined glycerine prices have been reduced by £10/ton. There has been a good call for hydrogen peroxide, formaldehyde, borax and copper sulphate.

Among agricultural chemicals there has been a steady buying interest in basic slag and the compound fertilisers, while in the coal tar products market most items are meeting with a fair demand.

**MANCHESTER** There has been a fair weight of new business on both home and shipping accounts, including additional replacement buying for delivery during the early months of 1962. While prices generally are on a steady basis the metal compounds continue to fluctuate, usually in a downward direction, in sympathy with the metals.

Current contracts are mostly being drawn against satisfactorily by home industrial outlets with the alkali products, dyes and intermediates and solvents prominent, and the shipping movement in the leading sections has been maintained. A quietly steady demand for the tar products is reported.

**SCOTLAND** Market conditions have not shown much alteration during the past week and from sections of industry the level of trading has been reasonably maintained. Quantity levels have also been steady, particularly those against contract offtakes. An important factor is still the delivery position, especially in regard to immediate requirements. Enquiries have featured well and as already reported quite a number of these pertain to 1962 requirements.

Prices generally have remained firm although it is very pleasing to note a further reduction of £10/ton in the price of glycerine. The position in regard to exports is still unchanged, with considerable interest still being shown.



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Gordon Murray, Esq.,  
Messrs. Gordon Murray & Co. Ltd.,  
244-250, Whitechapel, E.C.2.

21 November 1961.

Dear Mr Advertiser

During the past three or four years more advertising people than ever have taken personal interest in the National Advertising Benevolent Society and its work. Two most welcome effects have followed - advertising men and women in difficulties are brought to the notice of the Society in increasing numbers, and the list of our subscribers is growing steadily.

The first effect means that more and more money is needed to give the relief and ease of mind for which NABS is constituted. As I write, we are helping 287 adults and caring for 62 children.

This is justification enough for asking for generous support - but there is also a project in hand that will make a very personal appeal to each of us. NABS moves ahead with its plan for a home for the elderly; a home that is to give individual homes in which the older ones will make their own atmosphere.

Already we have the land, and that has not been easy to find. But this means that we have taken the first and most important step in what must be a long term project. It will involve a big expenditure.

So as this year's President, I appeal for NABS with confidence. We need your generous help.

Yours sincerely,  
Glanvill Benn

# NEW PATENTS

By permission of the Controller, H.M. Stationery Office, the following extracts are reproduced from the 'Official Journal (Patents)', which is available from the Patent Office (Sales Branch), 25 Southampton Buildings, Chancery Lane, London W.C.2, price 3s 6d including postage; annual subscription £8 2s.

Specifications filed in connection with the acceptances in the following list will be open to public inspection on the dates shown. Opposition to the grant of a patent on any of the applications listed may be lodged by filing patents form 12 at any time within the prescribed period.

## ACCEPTANCES

### Open to public inspection 28 December

Acetylene transition metal carbonyl derivatives. Union Carbide Corp. **885 514**  
Unsaturated polyester moulding compositions. Plastics & Alloys Ltd. **885 461**  
Purification of industrial effluents. Gas Council. **885 834**  
Polyurethane resins. National Research Development Corp. **885 405**  
Preparation of foams. Dunlop Rubber Co. Ltd. **885 406**  
Transfer coating compositions. Burroughs Corp. **885 642**  
Organic zirconium derivatives and paint, oil and organic-base ink compositions containing them. Union Carbide Corp. **885 679**  
Anion-exchanger with sponge structure. Farbenfabriken Bayer AG. **885 719**  
Water-soluble dyestuffs containing unsaturated carboxylic acid residues. Ciba Ltd. **885 814**  
Anthraquinone dyestuffs and their manufacture and use. Ciba Ltd. **885 681**  
Monoepoxidation of diunsaturated esters of acrylic and methacrylic acids. Rohm & Haas Co. **885 839**  
Selective monoepoxidation of diunsaturated esters of acrylic and methacrylic acids. Rohm & Haas Co. [Addition to 885 839.] **885 840**  
Herbicides and O-ester bis-amides of phosphoric acid for use therein. Monsanto Chemical Co. **885 464**  
Benzotriazoles and fungicidal compositions therefrom. Farbenfabriken Bayer AG. **885 843**  
Preparation of alkyl  $\alpha$ -cyanoacrylates. Rohm & Haas Co. **885 844**  
Synthetic lubricants. British Petroleum Co. Ltd., Pethrick, S. R., and Sparke, M. B. **885 731**  
Purification of hydrocarbon polymers. Du Pont de Nemours & Co., E. I. [Addition to 869 110.] **885 845**  
Water-soluble dyestuffs containing halogen acyl-amino groups and their manufacture and use. Ciba Ltd. **885 815**  
Process for the preparation of polymers with chains containing phosphorus, carbon and silicon. Bataafse Petroleum Maatschappij N.V. **885 466**  
Fungicidal composition. Ruhrchemie AG. **885 876**  
N-sulphonyl-N'-acyl-ureas and process for their manufacture. Farbwerke Hoechst AG. **885 468**  
7-Triazinylamino-3-phenyl coumarins and their use. Geigy AG, J. R. **885 847**  
Thermoplastic materials. Montecatini. **885 325**  
Process for the preparation of unsaturated aldehydes. Cities Service Research & Development Co. **885 587**  
Diazacarbocyanine bases. Geigy S.A., J. R. **885 520**, **885 521**  
Treatment of brine solutions. Imperial Chemical Industries Ltd. **885 818**  
Oxazoles. Ciba Ltd. **885 469**  
Urea synthesis using excess ammonia. Toyo Katsui Industries Inc. **885 691**

Cross-linked alpha-olefin polymers and process for preparing them. Montecatini. **885 476**  
Separation of gas mixtures. British Oxygen Co. Ltd. **885 735**  
Polycarbonates. Imperial Chemical Industries Ltd. **885 442**  
Fluorescent silyl triazole compounds and their use. Geigy AG, J. R. [Addition to 774 010.] **885 483**  
Method of conducting heterogeneous chemical reactions. Glaser, W. **885 477**  
Resinous reaction products. American Cyanamid Co. **885 738**  
Pregnatrienes and method of preparation. American Cyanamid Co. **885 850**  
Process for reduction with boron compounds. Goerrig, D. **885 852**  
Copolyesters of polyethylene terephthalate. Imperial Chemical Industries Ltd. **885 739**  
Oxidation of naphthalene and catalyst therefor. American Cyanamid Co. **885 651**  
Solutions of modified polyesters and sulphur containing solvents. Chemstrand Corp. **885 522**  
Chemical modification of isoocten-muliolefin copolymers. Esso Research & Engineering Co. [Addition to 842 557.] **885 743**  
Isocyanato-urethane waterproofing agents and materials waterproofed therewith. Esso Research & Engineering Co. **885 523**  
Flexible isocyanate polymers and their production. Badische Anilin- & Soda-Fabrik AG. **885 450**  
Cyclopentadiene derivatives. Imperial Chemical Industries Ltd. **885 524**  
Androstene and androstane derivatives. Searle & Co., G. D. **885 782**  
Monoazo dyestuff pigments containing N-pyrenyl-acylamino groups and their manufacture and use. Ciba Ltd. **885 452**  
Cobaltiferous mono-azo dyestuffs of the benzene-azo-pyrazolone series. Holliday & Co. Ltd., L. B. [Addition to 844 873.] **885 457**  
Production of zirconium hydride. General Dynamics Corp. **885 786**  
Ion-exchangers containing sulphydryl groups. Farbenfabriken Bayer AG. **885 721**  
Curing of epoxide resins. Anchor Chemical Co. Ltd. **885 749**  
Steroids and the manufacture thereof. Upjohn Co. **885 756**  
Resin-bonded products from inorganic fibres and method for their manufacture. Höganäs-metoder A.B. **885 460**  
Aliphatic sulphate salts of esters of erythromycin or erythromycin B. Lilly & Co., Eli. **885 528**  
Aminotriazine salts. British Oxygen Co. Ltd. **885 529**  
Film-forming copolymers. Badische Anilin- & Soda-Fabrik AG. **885 750**  
2,3-Dimercaptoquinoxaline derivatives. Farbenfabriken Bayer AG. **885 789**  
Dyestuffs containing triazinylamino or pyrimidyl-amino radicals. Imperial Chemical Industries Ltd. **885 547**  
Dialkyl-amino-thiophosphoric acid esters. Farbenfabriken Bayer AG. **885 491**  
Interpolyesters of bibenzoic acid. American Viscose Corp. **885 492**  
Production of amides. British Petroleum Co. Ltd., and Fisher, I. S. **885 531**  
Aqueous polymer dispersions. Imperial Chemical Industries Ltd. **885 684**  
Penicillin derivatives of sulphonamides. Industrie Chimique Farmaceutica S.p.A., Leo. [Addition to 810 518.] **885 435**  
3-Indolyl aminoethyl ketones. Upjohn Co. [Addition to 834 028.] **885 688**  
Process for isolating acrylonitrile by distillation. Knapsack-Griesheim AG. **885 548**  
Steroids and the preparation thereof. Olin Mathieson Chemical Corp. **885 610**

Regeneration of catalysts. Esso Research & Engineering Co. **885 796**  
Process for the preparation of salts of trichloroacetic acid. Nobel Bozel. **885 336**  
Preparation of the growth hormone. Organon Laboratories Ltd. **885 798**  
Fermentative preparation of L-glutamic acid. Shionogi & Co. Ltd. **885 611**  
Trialkyl aluminium compounds and their preparation. Continental Oil Co. **885 612**  
Process for the production of 3,4-dimethyl-5-aminisoxazole. Roumania, Minister of Petroleum & Chemical Industries. **885 829**  
Production of urea. Toyo Katsui Industries Inc. **885 692**  
Rapid curing epoxy resin compositions and method of making same. Allied Chemical Corp. **885 800**  
Tertiary amines and process for their manufacture. Ciba Ltd. **885 891**  
Polyamide resins. General Mills Inc. **885 614**  
Steroids and the synthesis thereof. Olin Mathieson Chemical Corp. **885 439**  
Pyridazone compounds. Ciba Ltd. **885 570**  
Steroids of the pregnane series and method of preparing same. American Cyanamid Co. **885 571**  
Tetracycline compounds and preparation thereof. Pfizer & Co. Inc., Chas. **885 760**  
Production of quaternary phosphonium salts. American Cyanamid Co. **885 440**  
Copolymers of formaldehyde and isocyanic acid. Du Pont de Nemours & Co., E. I. **885 572**  
Process for the preparation of unsaturated nitriles from olefins. Union Chimique Belge S.A. **885 422**  
Electrolytic production of saturated fluorocarbons. Du Pont de Nemours & Co., E. I. **885 635**  
Reinforced plastic with a styrene copolymer therein. Esso Research & Engineering Co. **885 808**

## DIARY DATES

### TUESDAY 28 NOVEMBER

S.C.I.—Edinburgh: University Chemistry Department, Kings Buildings, West Mains Rd., 4.30 p.m. 'Hydrogen bonding from a crystallographer's viewpoint' by Dr. J. C. Speakman.  
S.C.I.—London: 14, Belgrave Sq., S.W.1 at 6.30 p.m. 'Polyolefin fibres & films' by Dr. C. A. Finch.  
Soc. Inst. Tech.—London: 20, Queen Anne St., W.1. 'Automatic plant analysis by electrochemical methods' by R. F. Rodger.

### WEDNESDAY 29 NOVEMBER

R.I.C.—London: Shell-Mex House, Strand, W.C.2 at 6.30 p.m. A.g.m.  
S.C.I.—Dublin: Chemistry Department, University College, Upper Merion St., 5.30 p.m. 'Modern electro-chemistry & its applications' by Prof. W. F. K. Wynne-Jones.

### THURSDAY 30 NOVEMBER

R.I.C.—London: Battersea College of Tech., Battersea Park Rd., S.W.11, 7 p.m. 'Chemical aspects of the work of the Warren Spring laboratory' by C. C. Hall.  
S.C.I.—Belfast: Queen's University, Stranmillis Rd., 7.45 p.m. 'Modern electro-chemistry & its applications' by Prof. W. F. K. Wynne-Jones.  
S.C.I.—Leeds: Chemistry Lecture Theatre, The University, 6.30 p.m. 'Aspects of the Biosynthesis of phenolic compounds' by Prof. C. H. Hassell.

### FRIDAY 1 DECEMBER

Instit. Plant Eng.—Leeds: Guildford Hotel, Headrow, 7.30 p.m. Film & social evening.  
S.C.I.—London: 14, Belgrave Sq., S.W.1, 6 p.m. 'The choice of reactor type for organic chemicals' by Prof. K. G. Denbigh.  
S.C.I.—Manchester: Visit Heinz, Kitz Green, Nr. Wigan, 3 p.m. Manchester Literary & Philosophical Soc.: 36, George St., 6.30 p.m. 'The microbiological control of food production' by D. A. Shapton.

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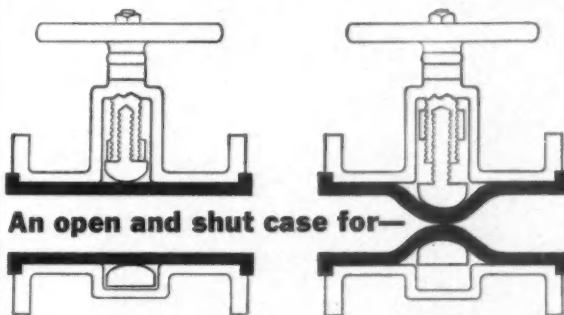
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